

100

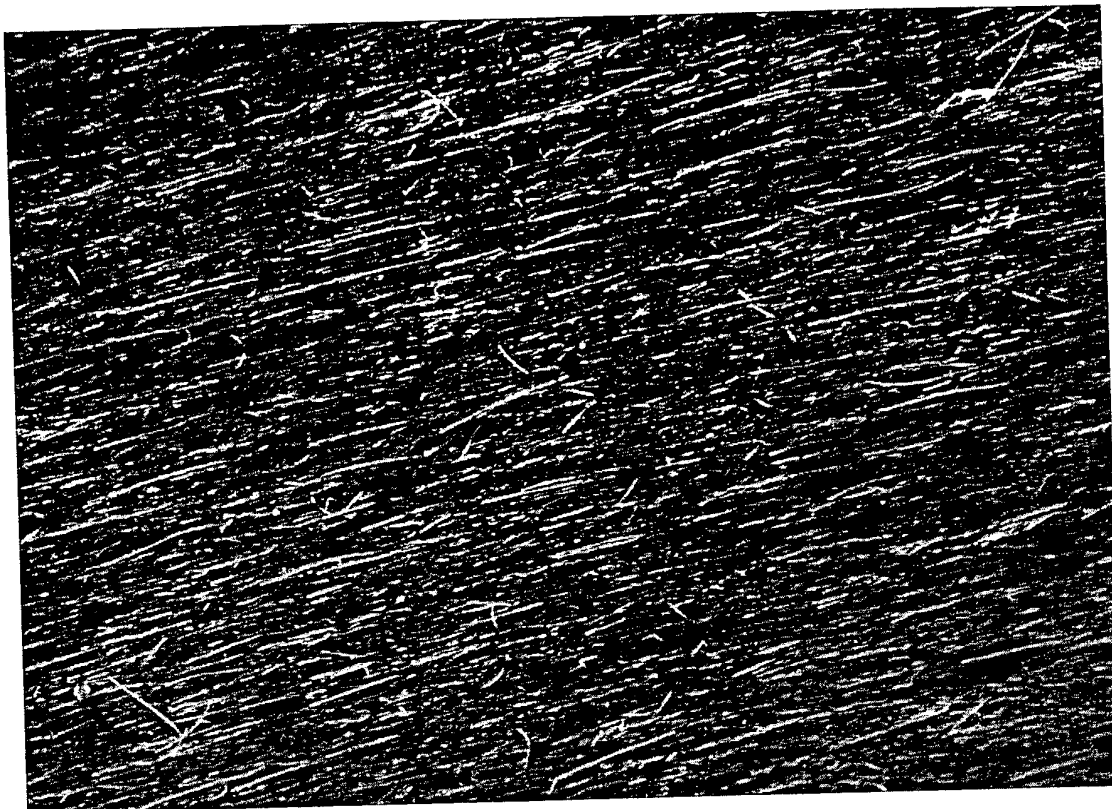


FIG. 1

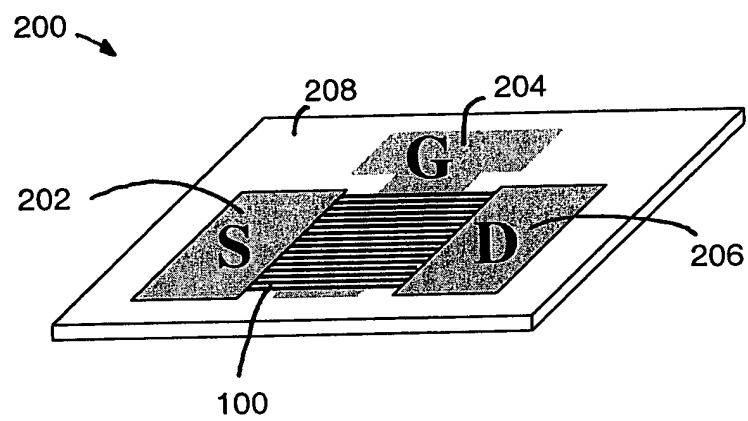


FIG. 2

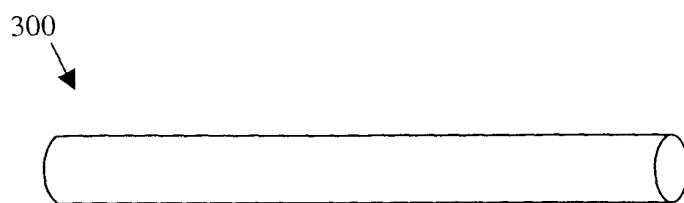


FIG. 3A

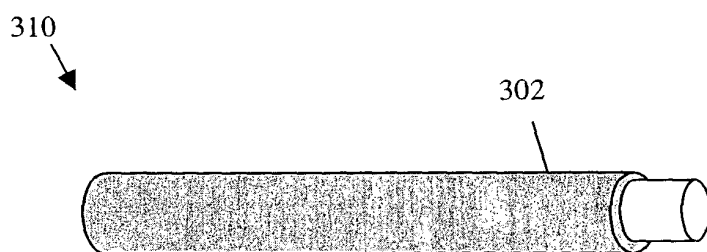


FIG. 3B



FIG. 3C

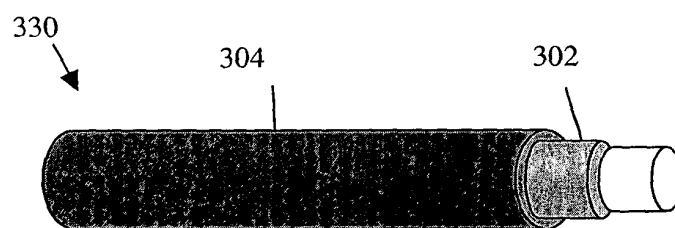


FIG. 3D

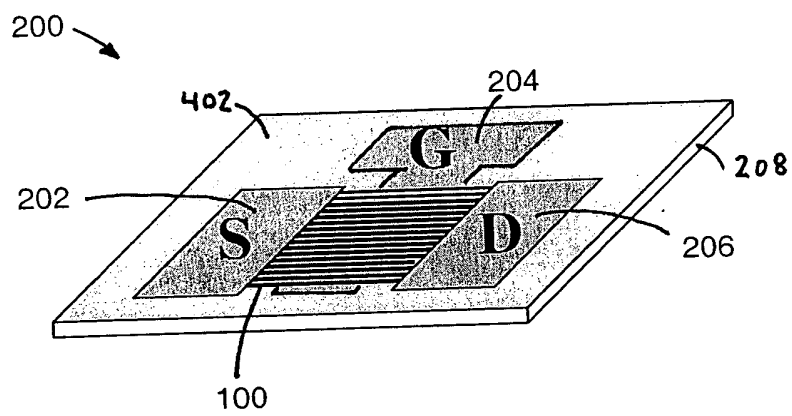


FIG. 4A

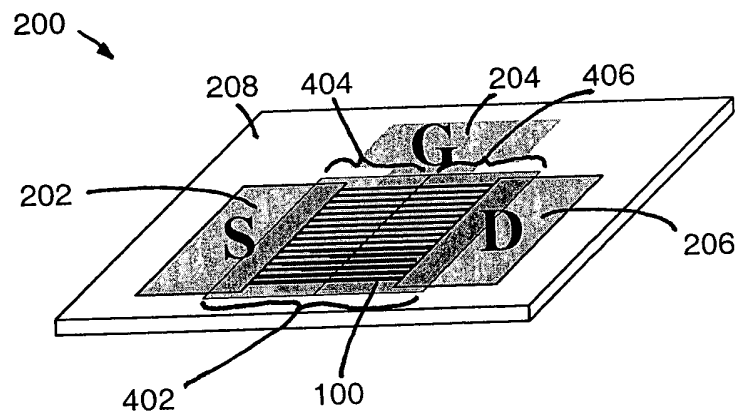


FIG. 4B

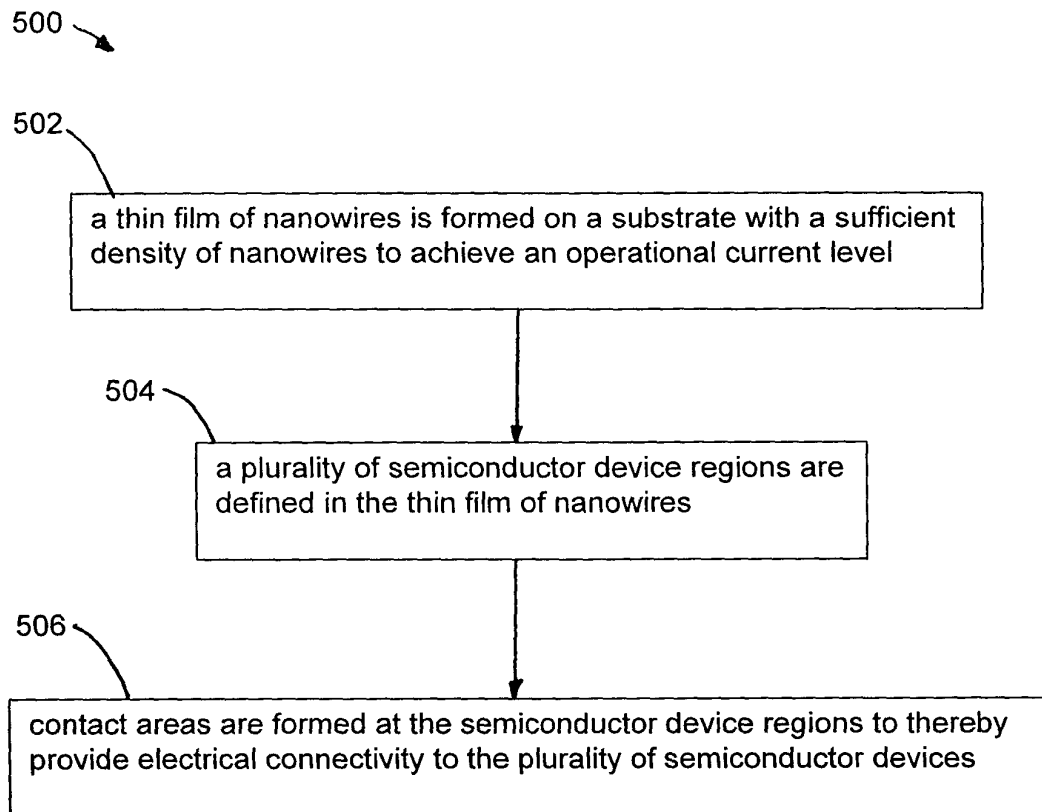


FIG. 5

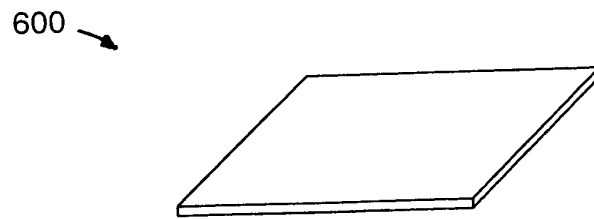


FIG. 6A

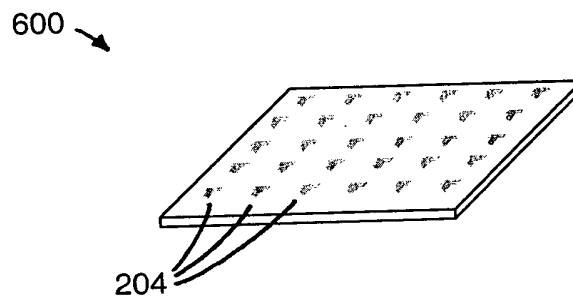


FIG. 6B

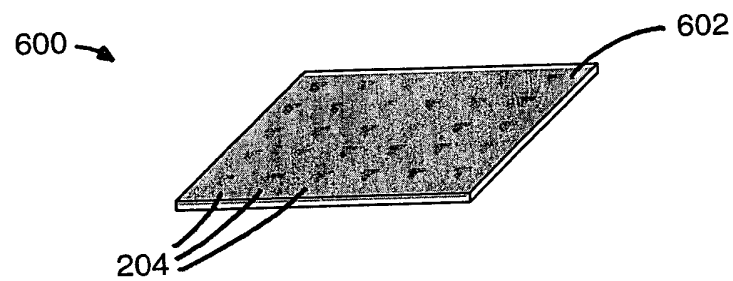


FIG. 6C

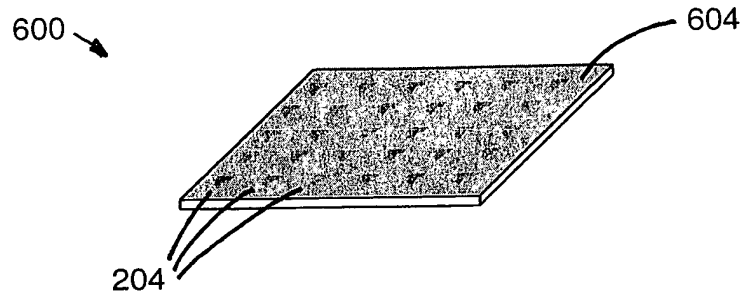


FIG. 6D

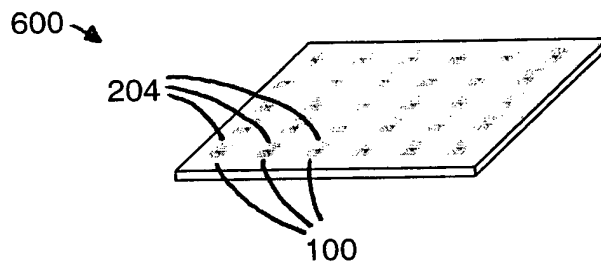


FIG. 6E

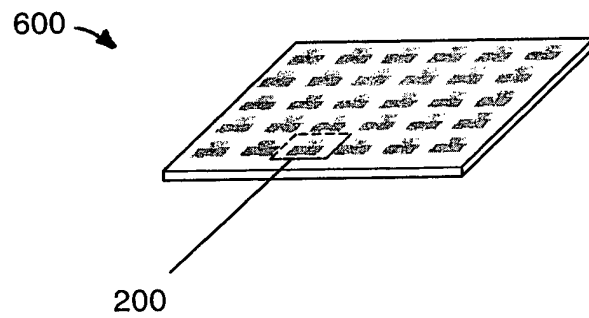


FIG. 6F

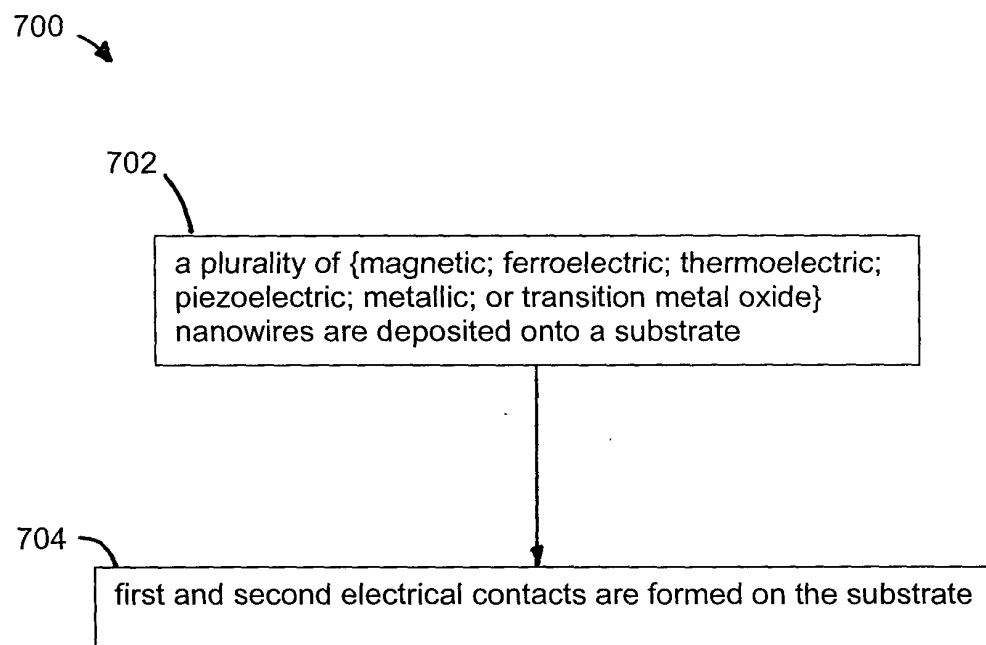


FIG. 7

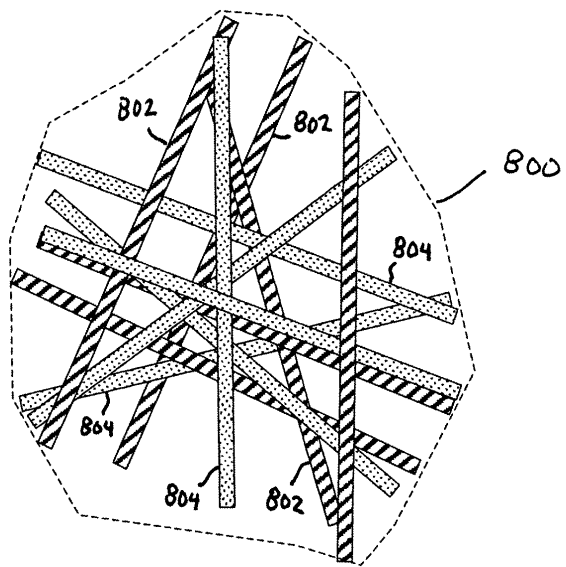


FIG. 8A

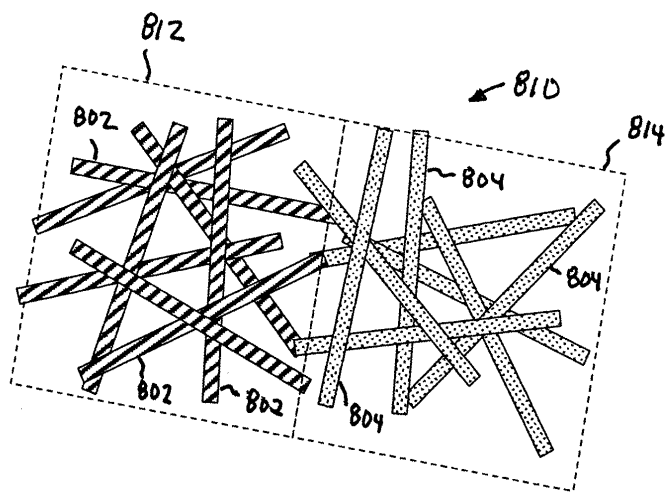


FIG. 8B

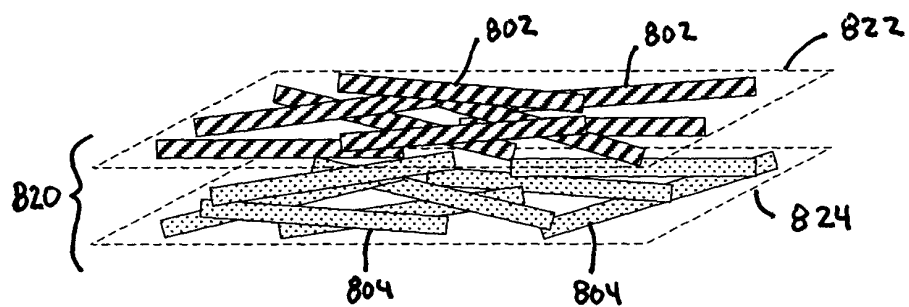


FIG. 8C

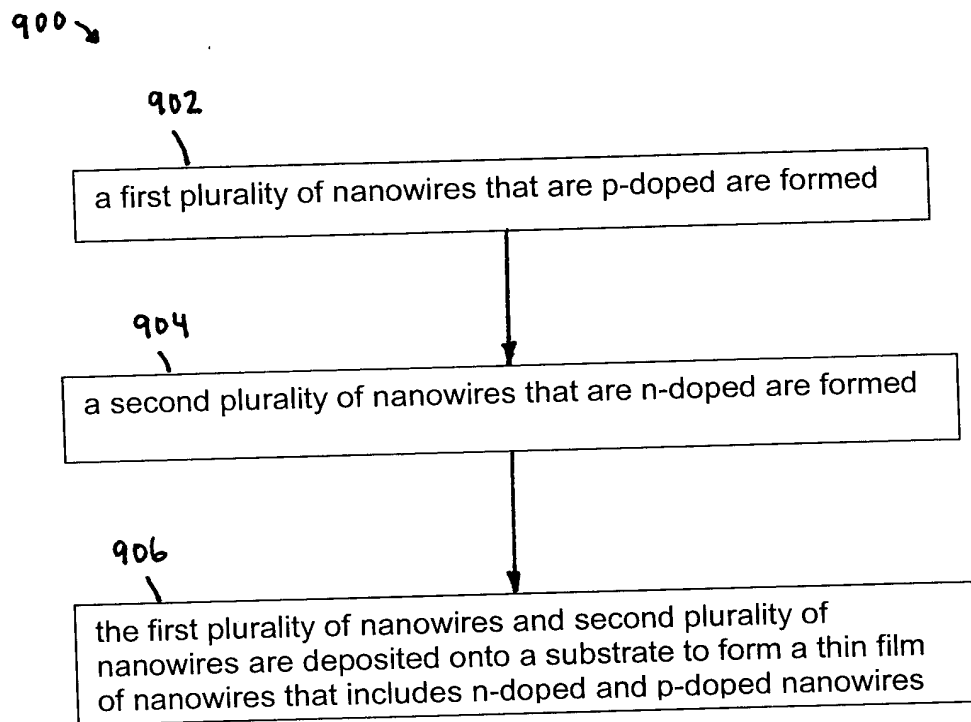


FIG. 9

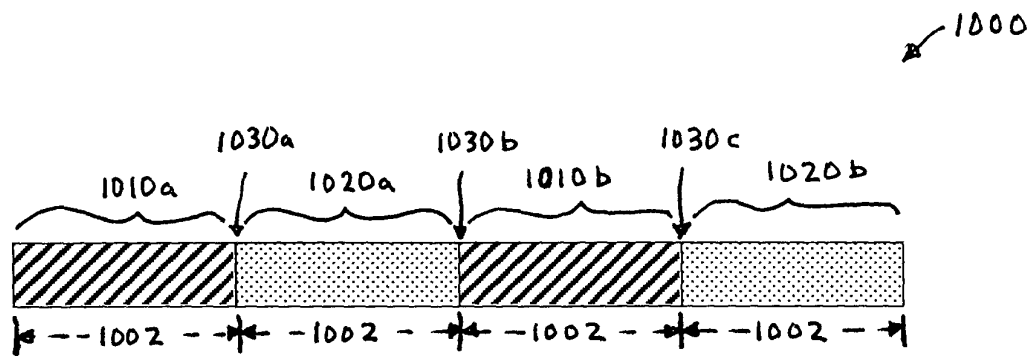


FIG. 10

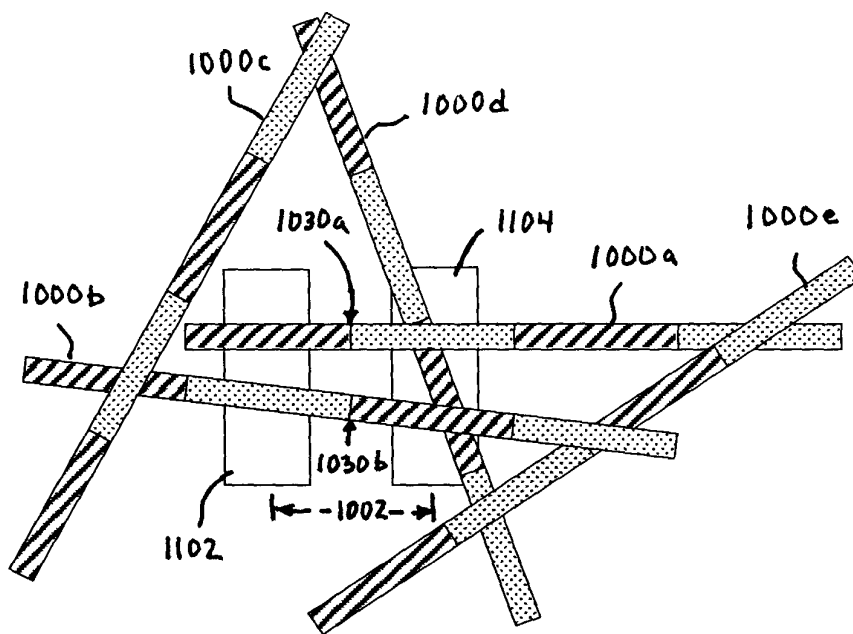


FIG. 11A

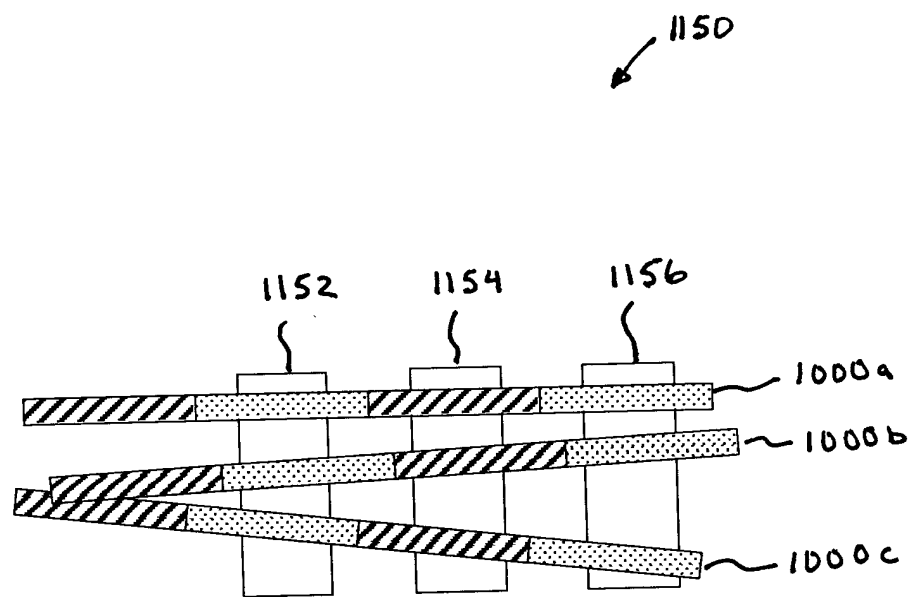


FIG. 11B

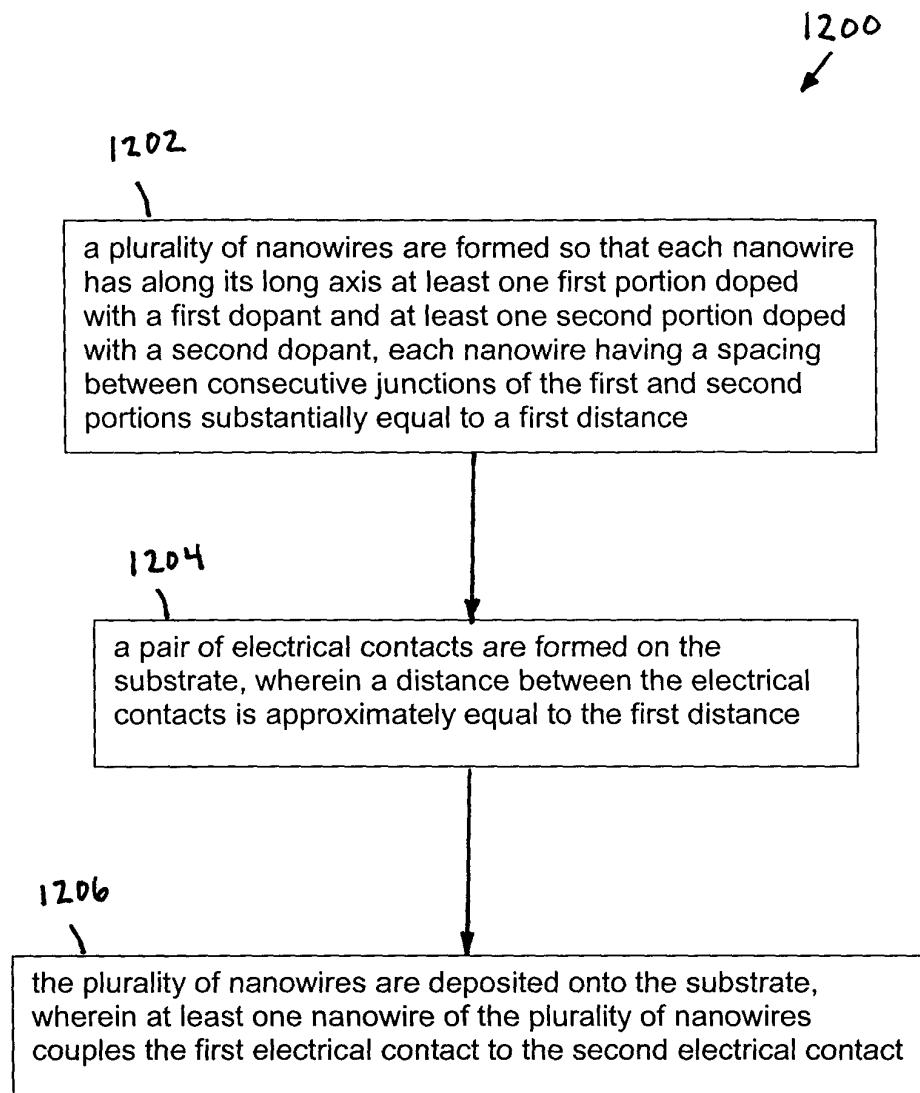


FIG. 12

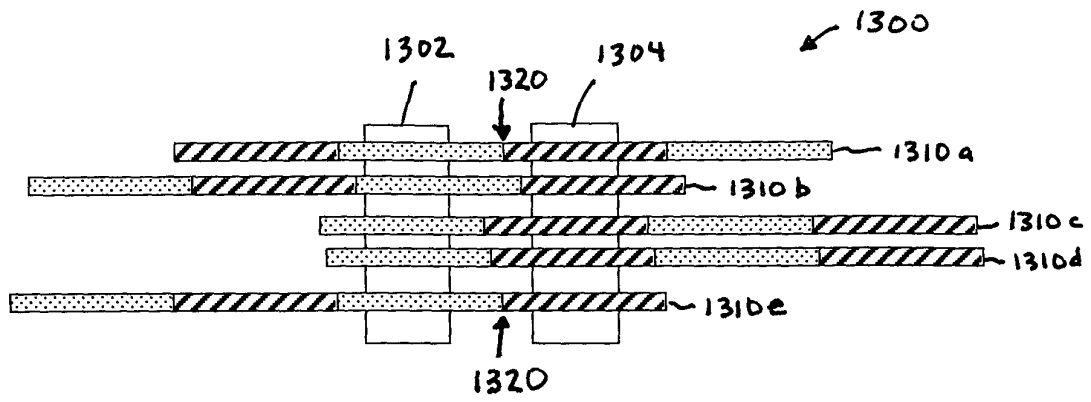


FIG. 13A

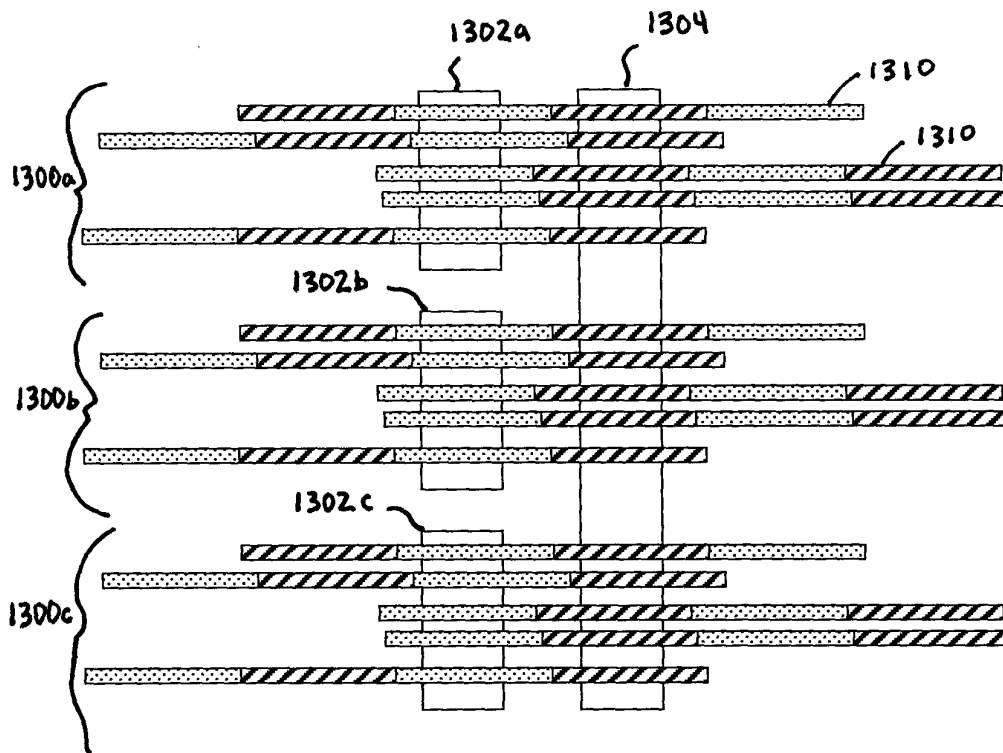


FIG. 13B

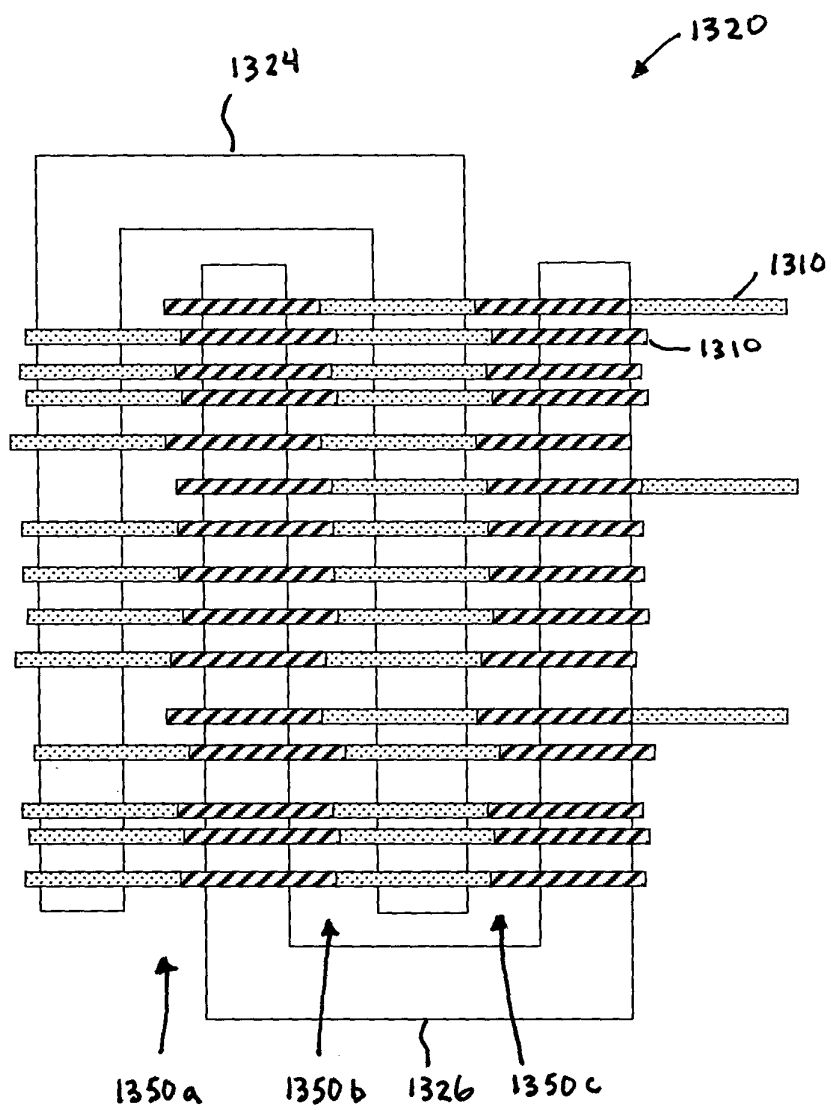


FIG. 13C

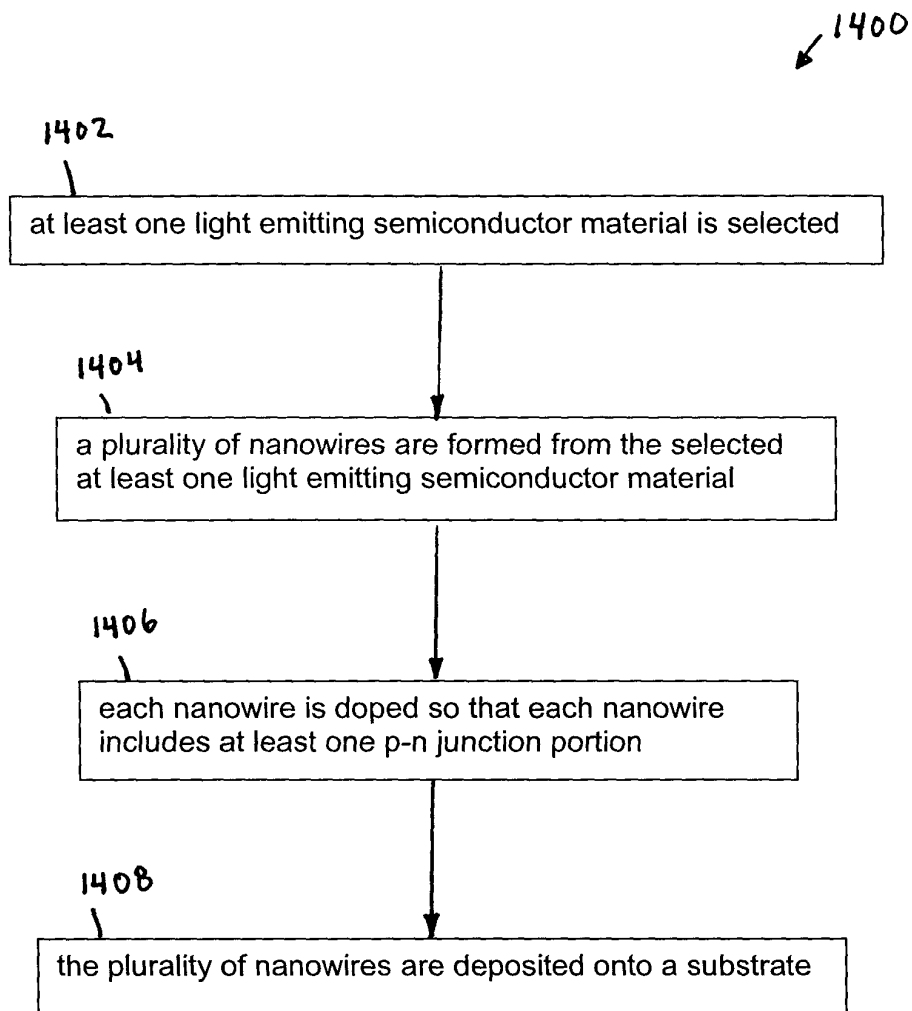


FIG. 14

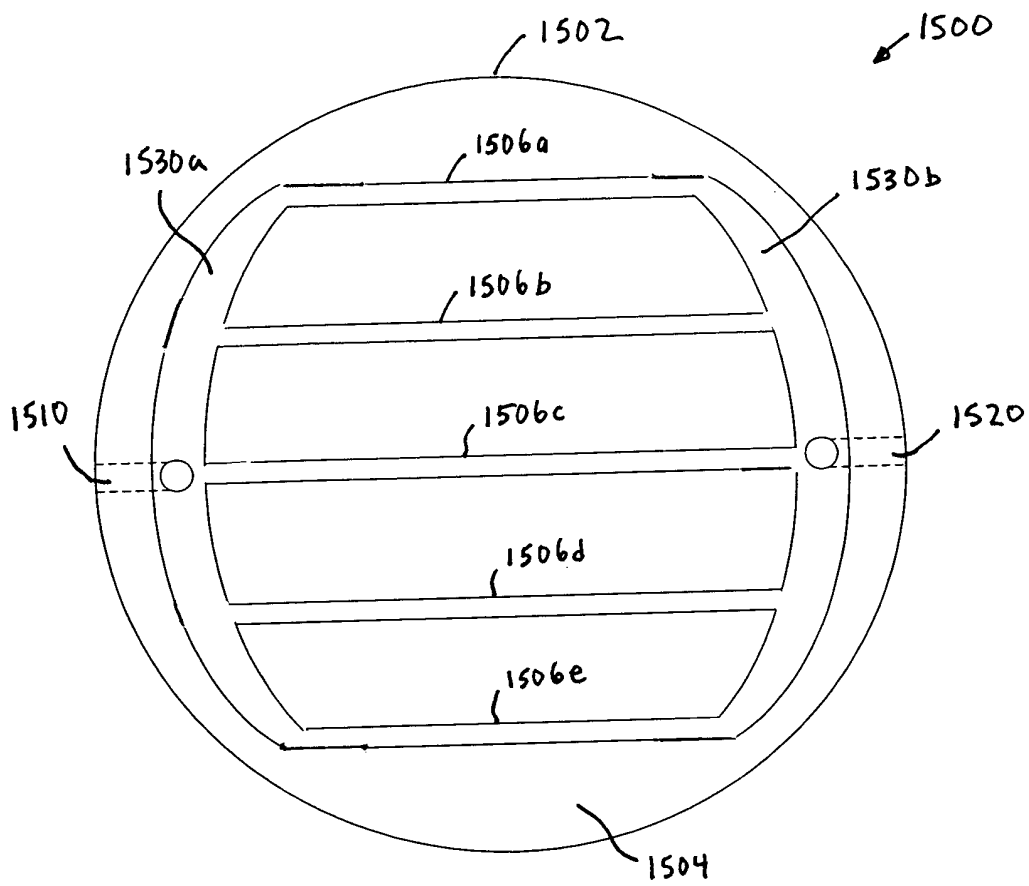


FIG. 15A

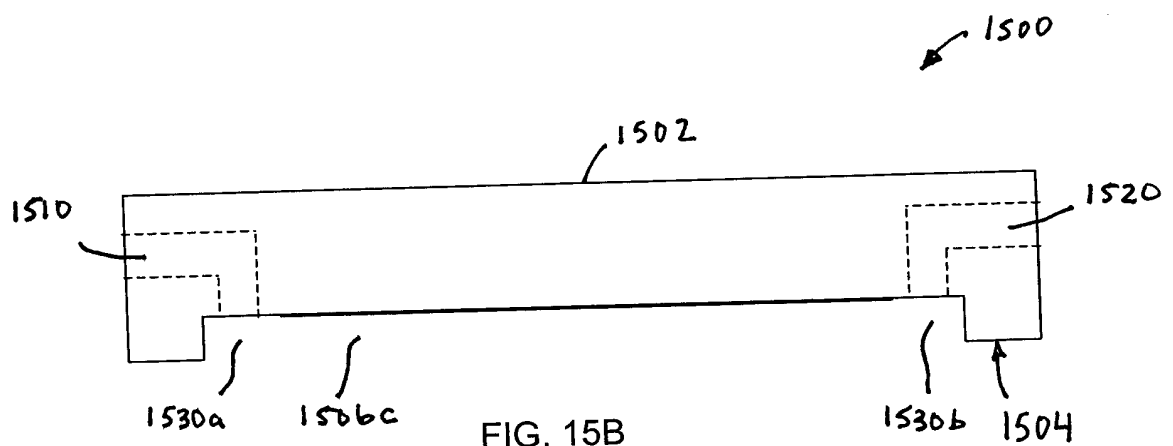


FIG. 15B

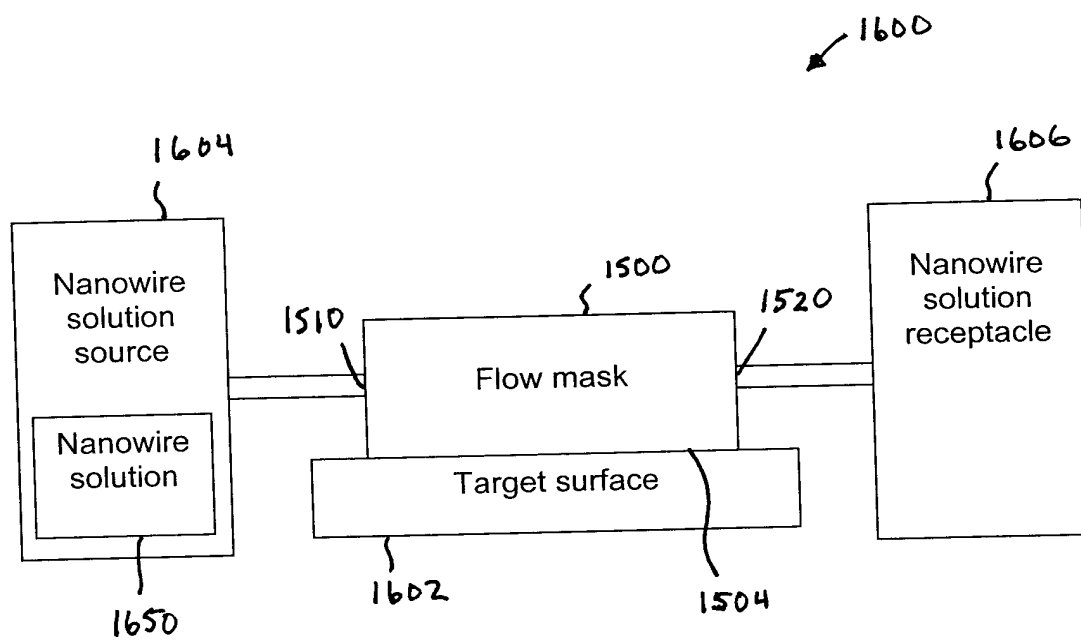


FIG. 16

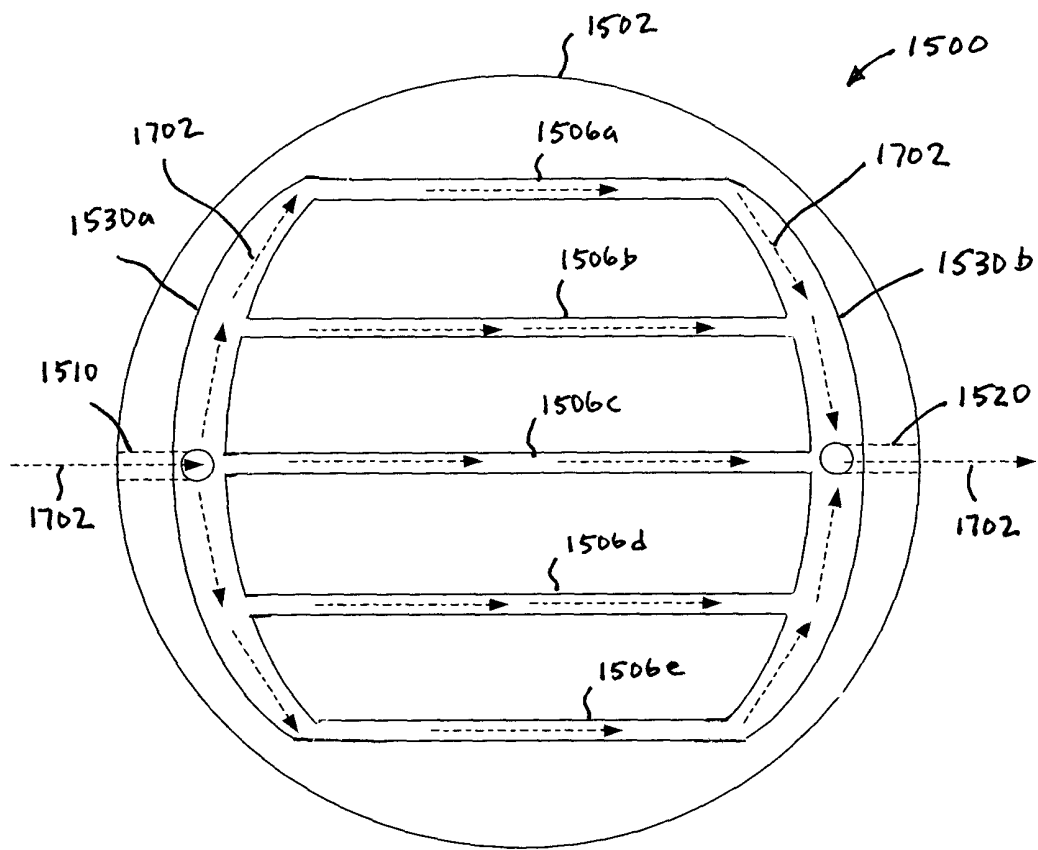


FIG. 17A

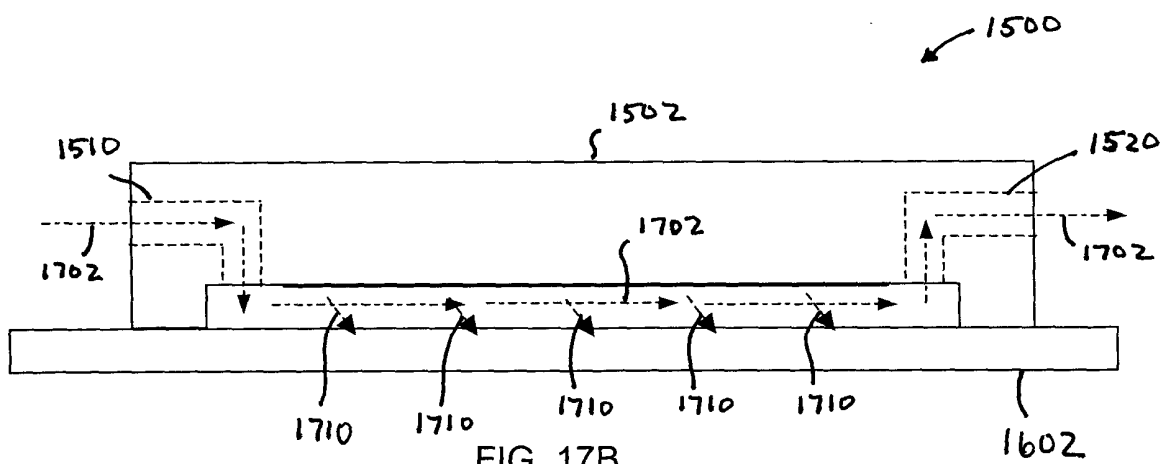


FIG. 17B

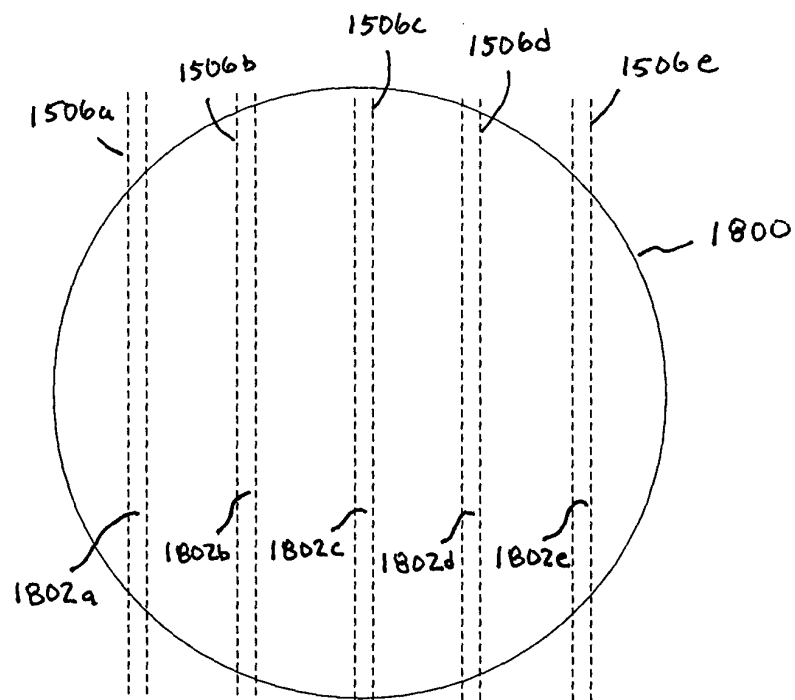


FIG. 18A

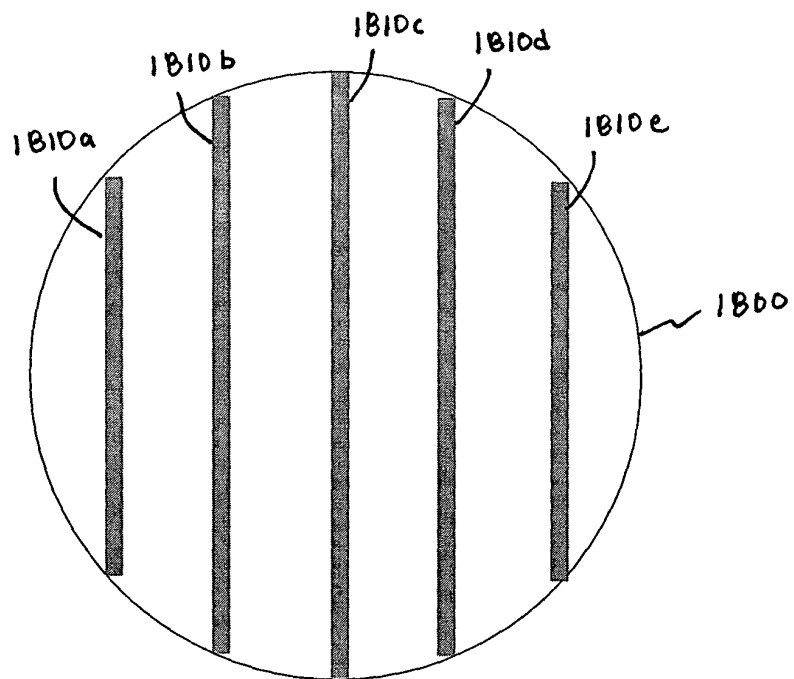


FIG. 18B

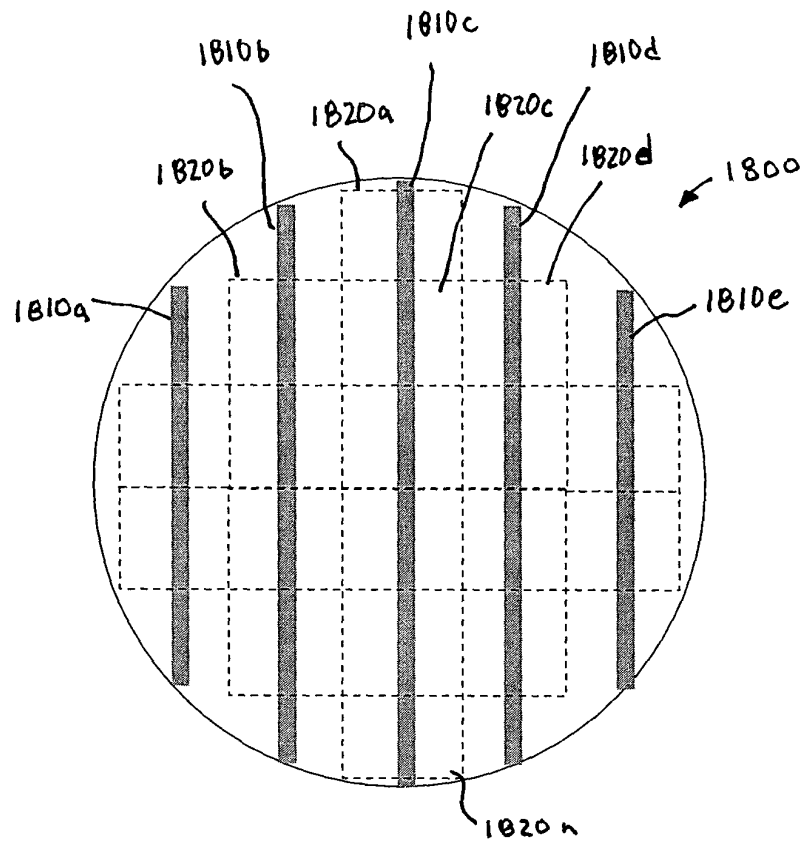


FIG. 18C

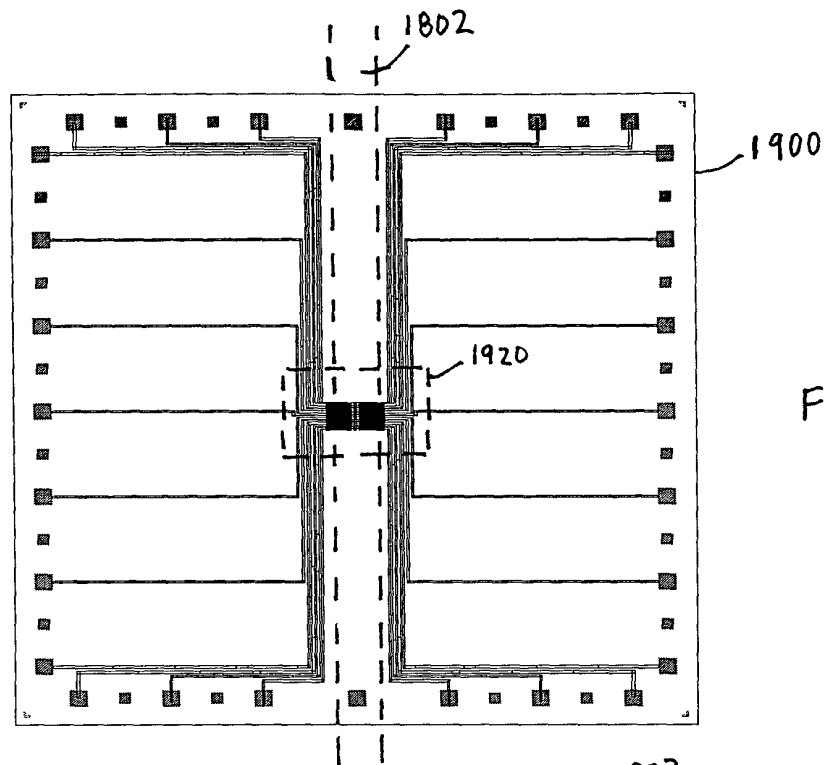


FIG. 19A

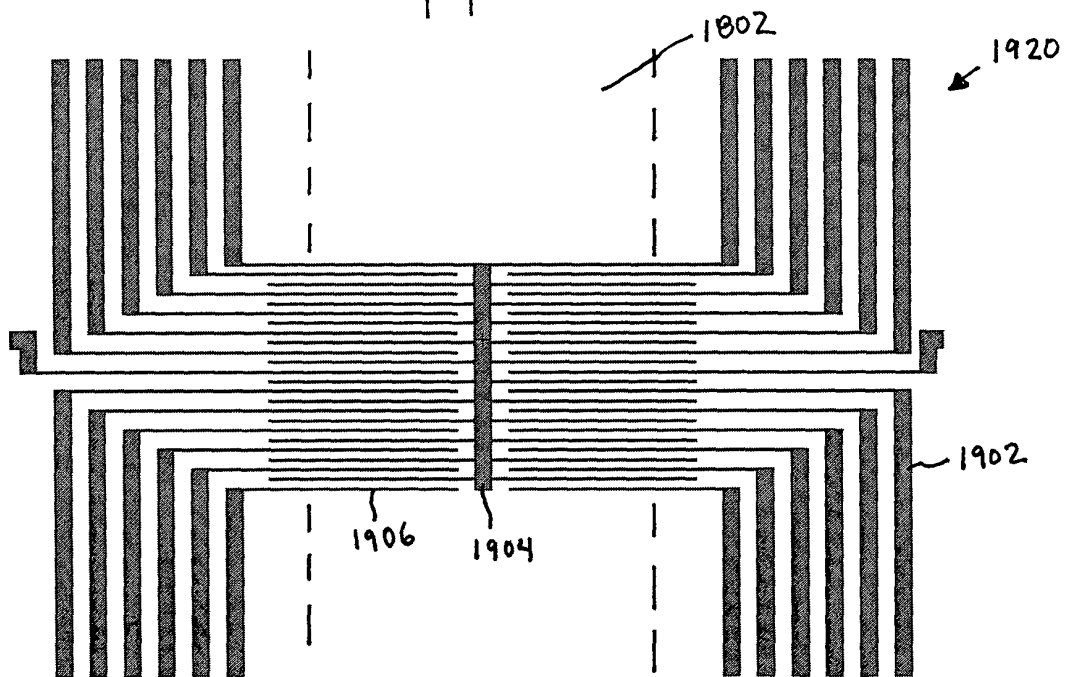


FIG. 19B

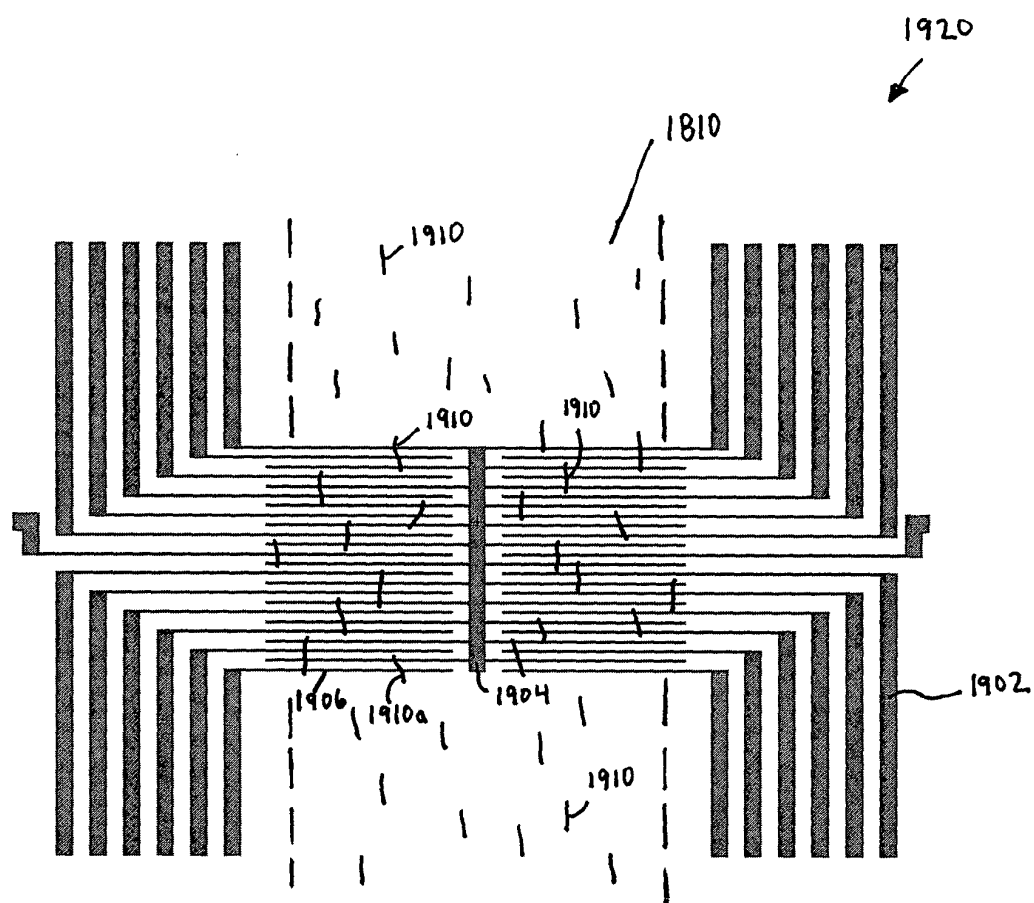


FIG. 19C

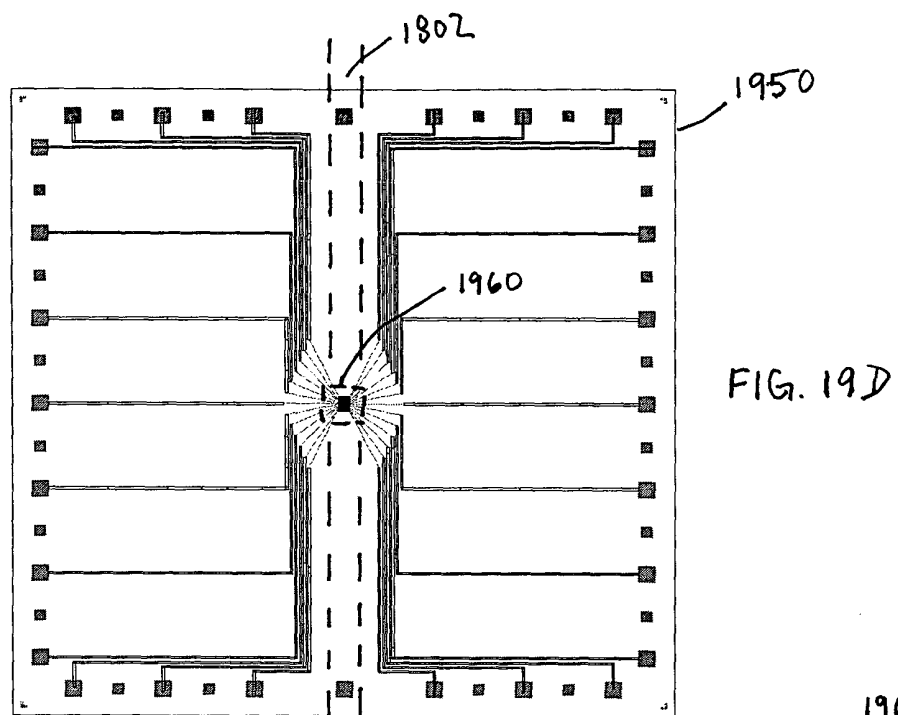


FIG. 19D

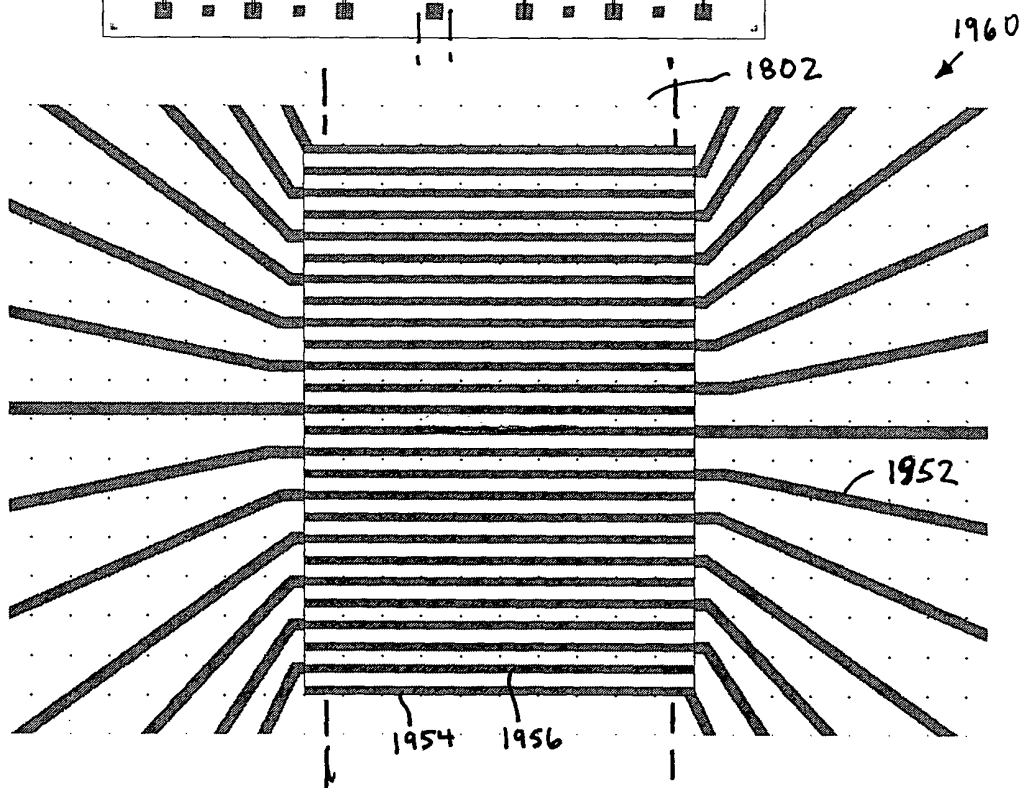


FIG. 19E

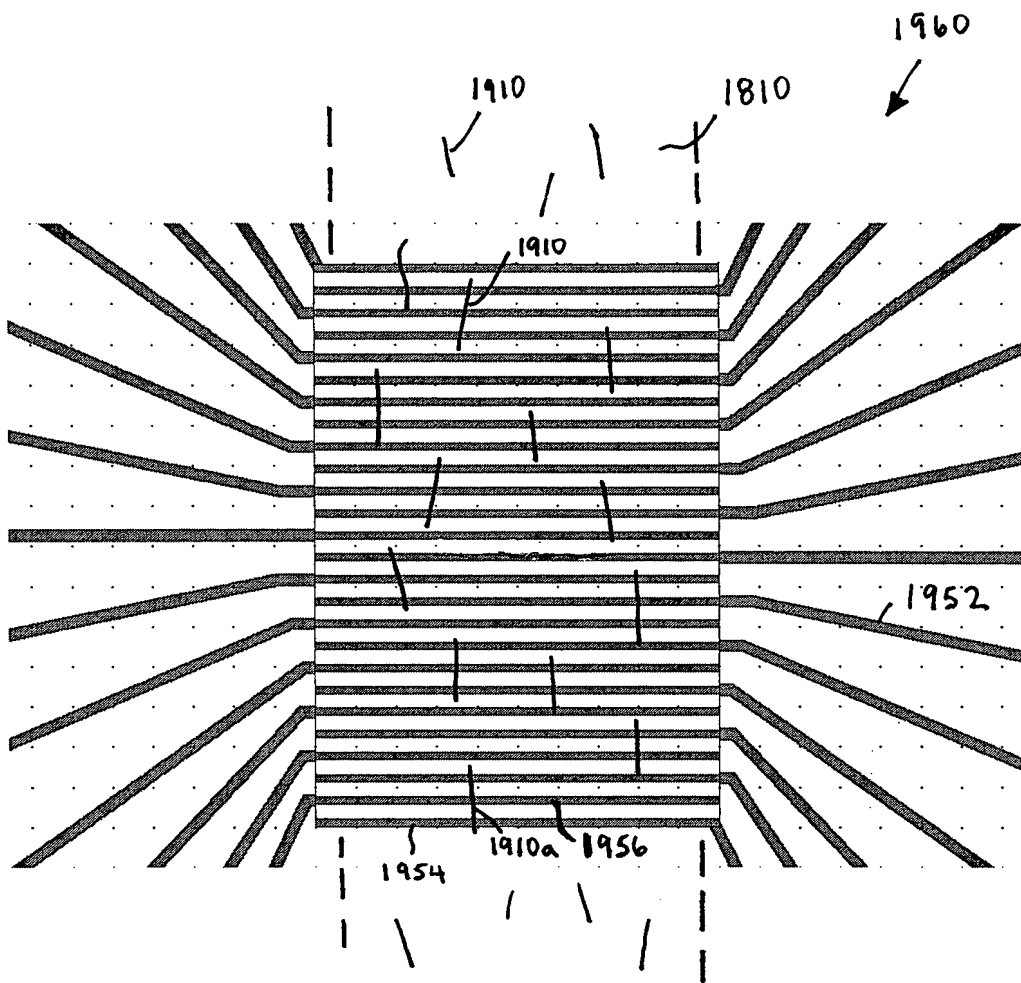


FIG. 19F

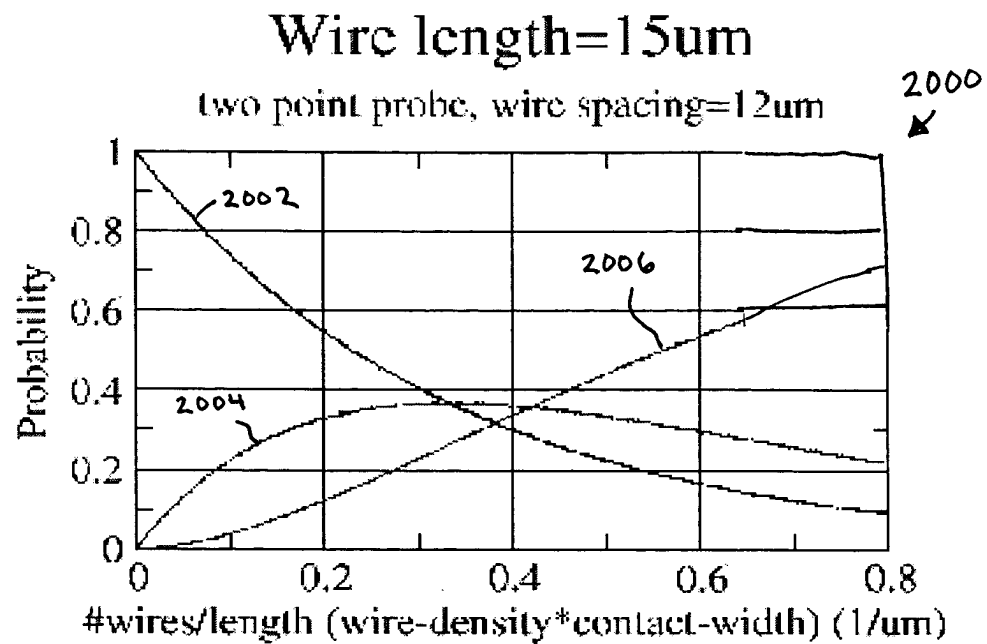


FIG. 20A

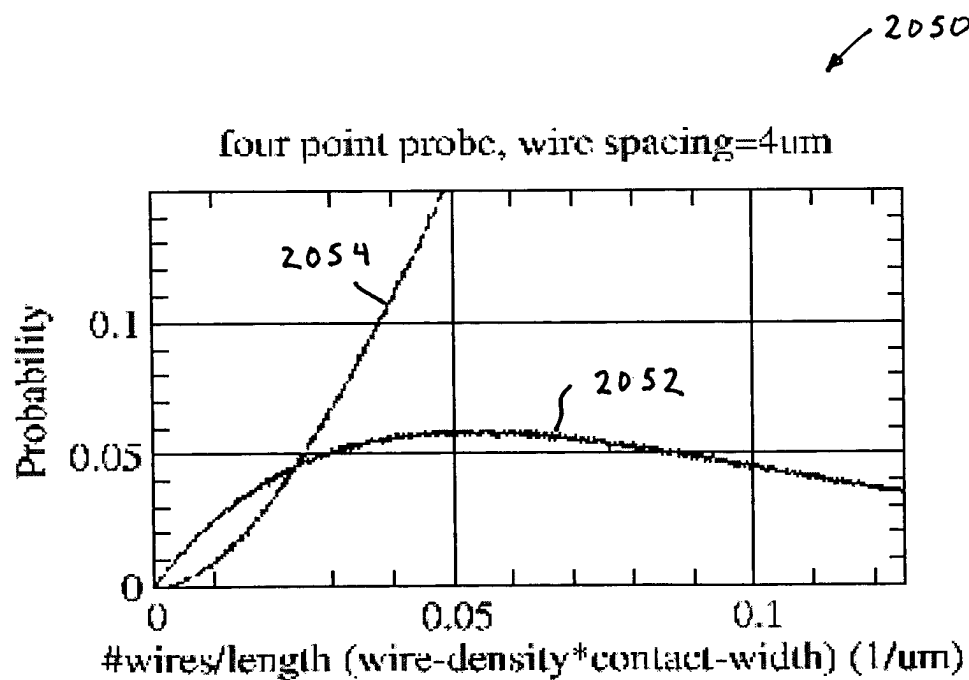


FIG. 20B

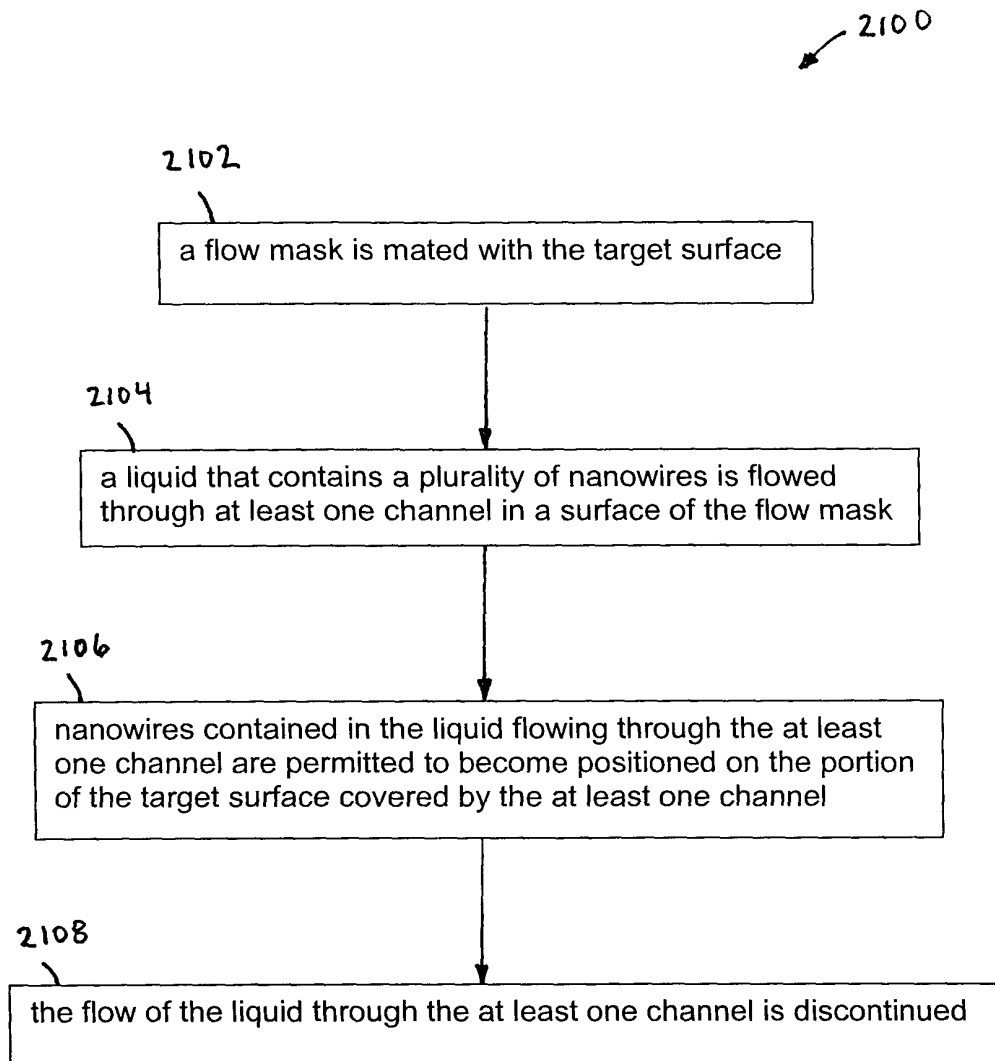


FIG. 21

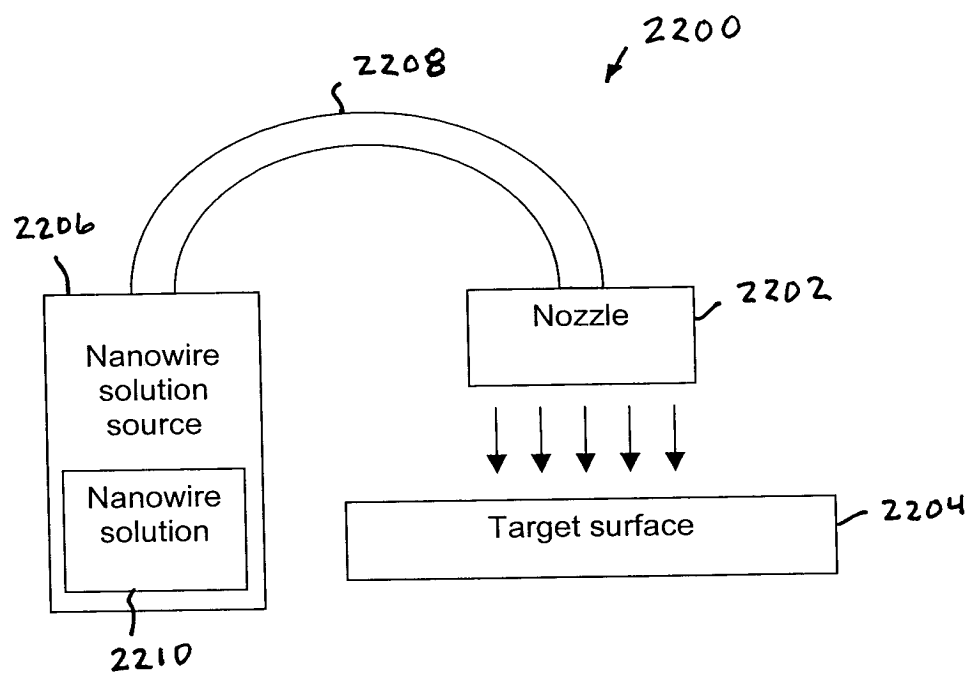


FIG. 22

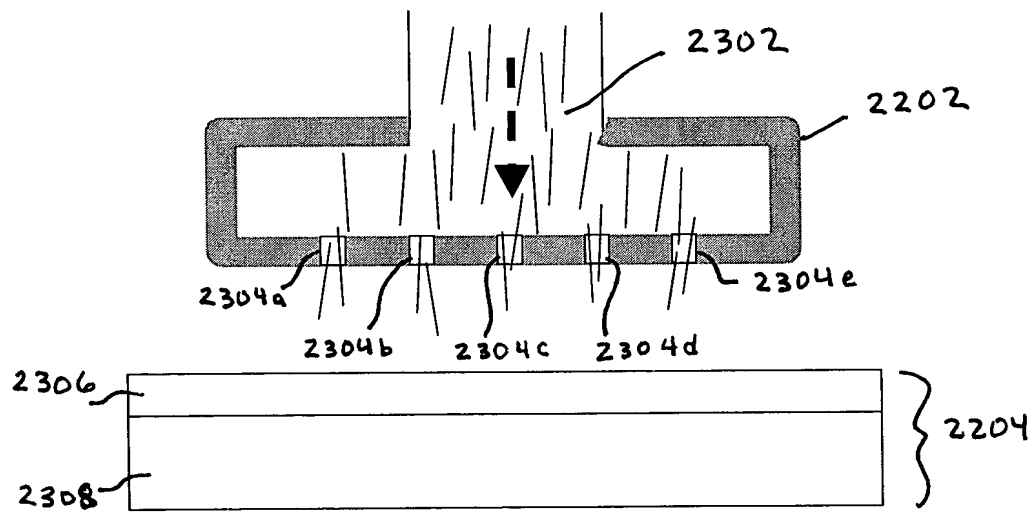


FIG. 23

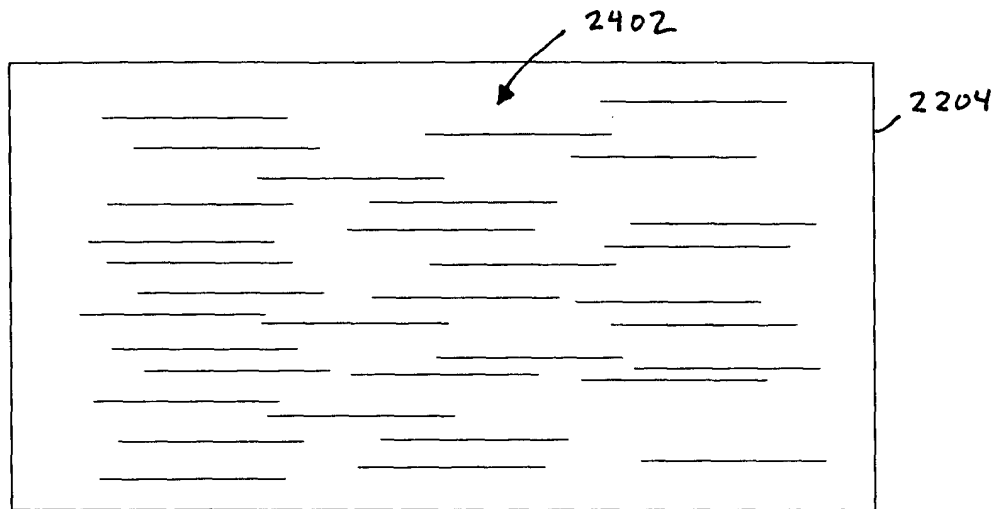


FIG. 24

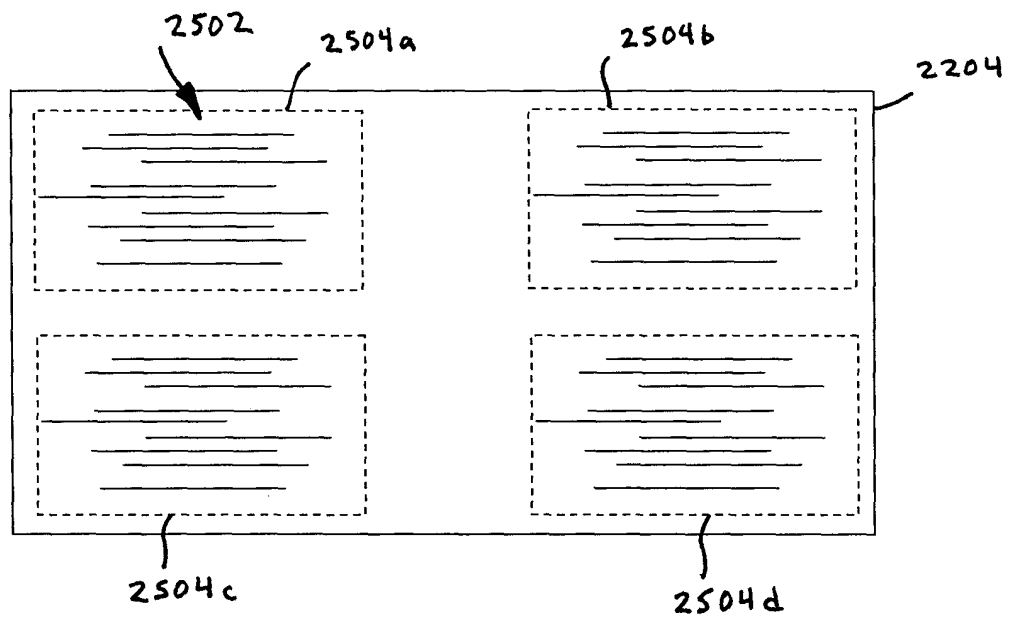


FIG. 25

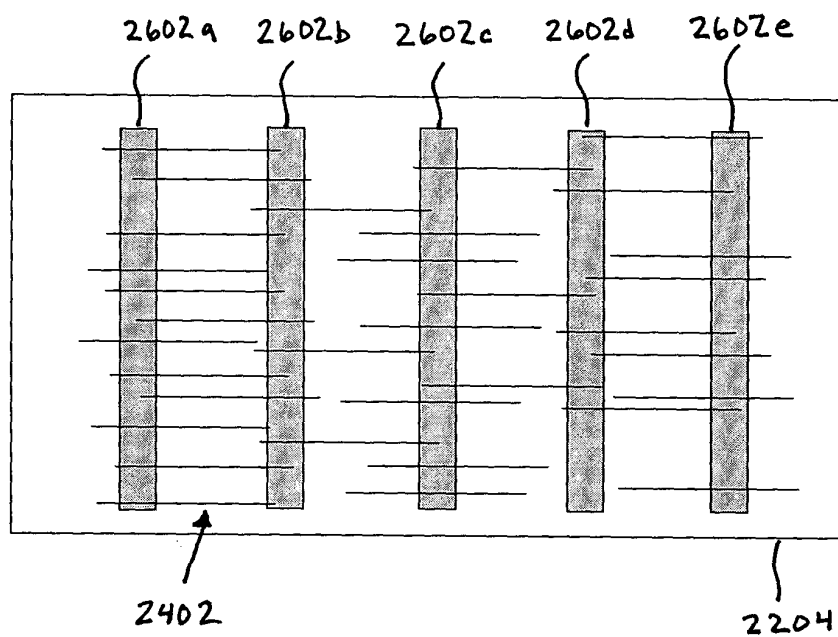


FIG. 26

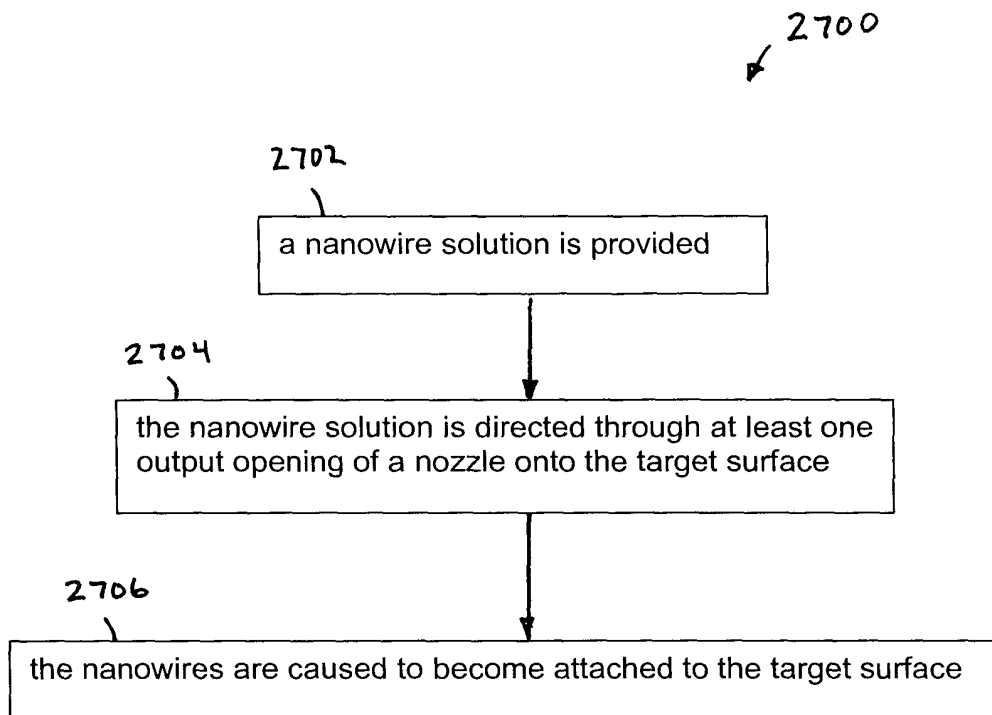


FIG. 27

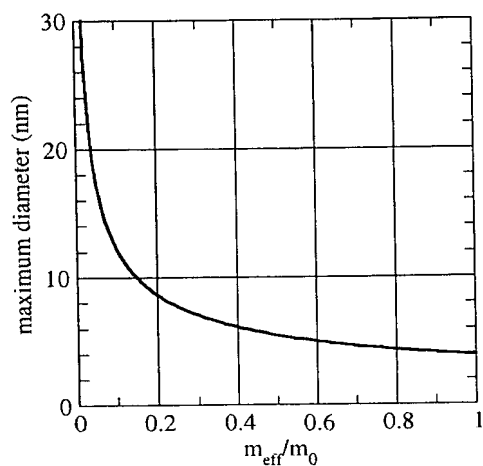


FIG. 28

Semiconductor	Effective mass m_{eff}/m_0	Band gap E_g (eV)
Diamond	0.57	5.5
Si	0.33	1.14
Ge	0.2	0.67
AlN	0.4	6.2
AlSb	0.12	1.58
GaN	0.13	3.2
GaP	0.38	2.9
GaAs	0.067	1.5
GaSb	0.041	0.72
InN	0.11	2.0
InP	0.07	1.29
InAs	0.02	0.33
InSb	0.013	0.16
ZnO	0.27	3.35
Zns	0.40	3.68

FIG. 29

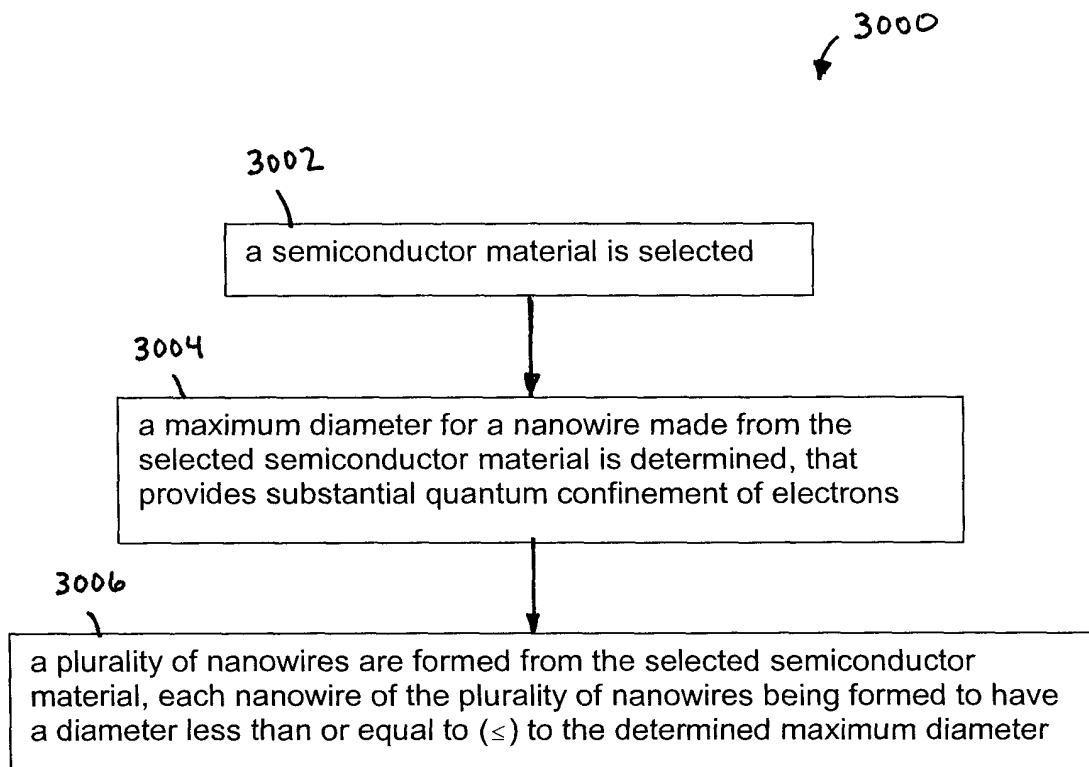


FIG. 30

3100

3102 3104 3106 3108

Material	E_g (eV)	Δ (eV)	E_g (eV)	m_e/m_0	m_h/m_0	m_h/m_0
AlAs	3.13	0.275	21.1	0.124	0.26	0.5
GaP	2.895	0.08	22.2	-	0.17	0.67
GaAs	1.519	0.34	25.7	0.0665	0.082	0.45
InP	1.423	0.108	20.4	0.079	0.12	0.65
InAs	0.418	0.38	22.2	0.024	0.025	0.41
InSb	0.23	0.8	23.1	0.014	0.016	0.4

Table 1.1. Parameters for various zinc blende III - V semiconductors (all quoted for low temperature). (Note: all values are for the direct gap at zone center, though AlAs and GaP are indirect gap semiconductors, having lower conduction band minima away from zone center.)

FIG. 31

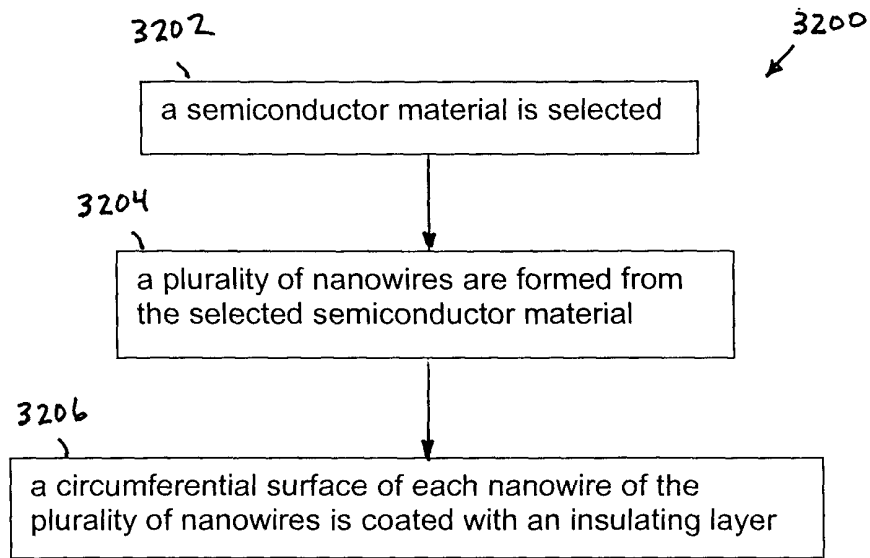


FIG. 32

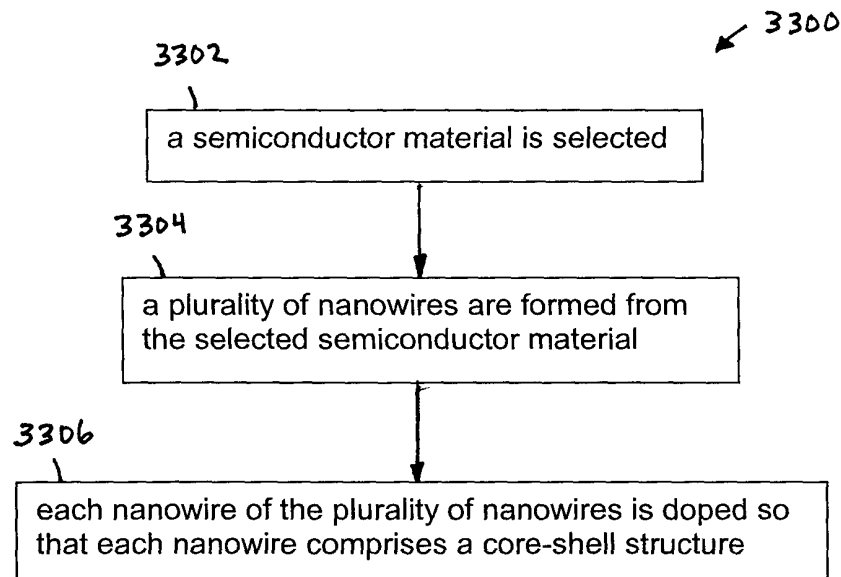
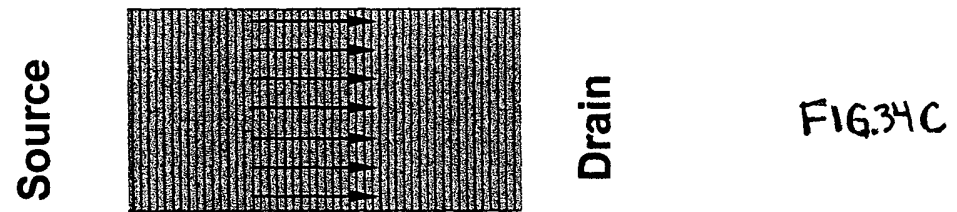
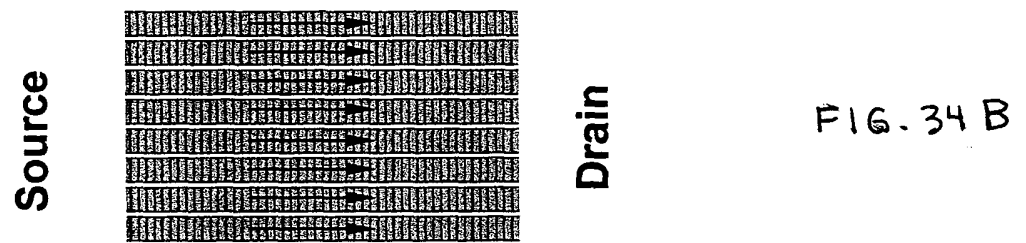
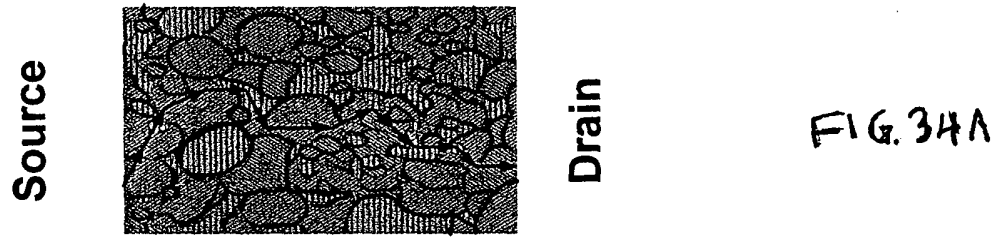


FIG. 33



3500

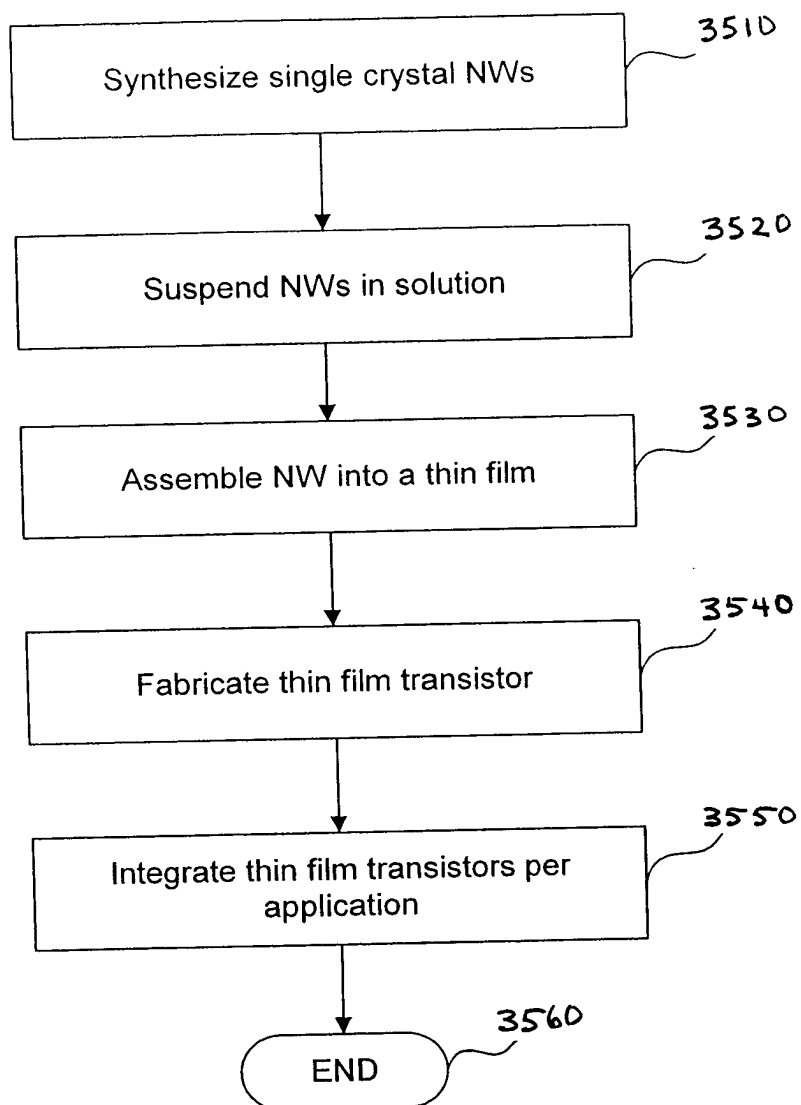


FIG. 35A

FIG. 35B

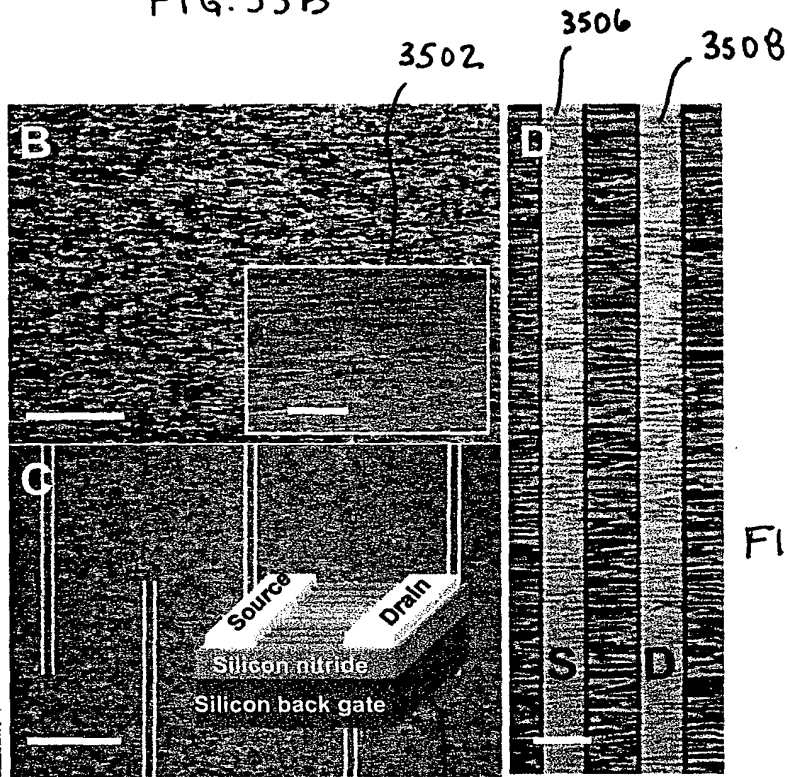


FIG. 35D

FIG. 35C

3504

FIG. 36 A

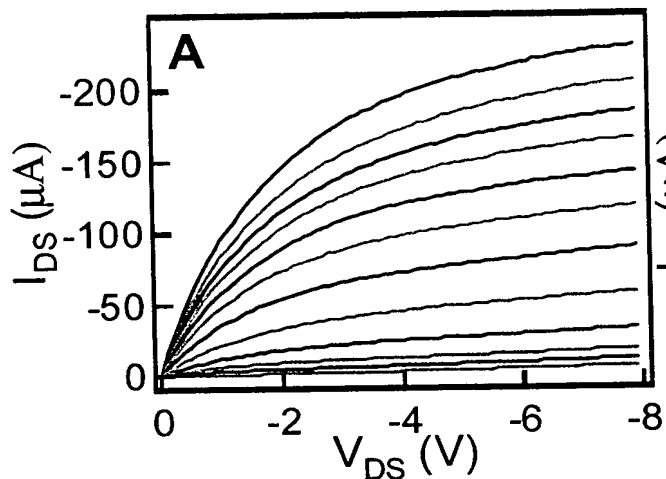


FIG. 36 B

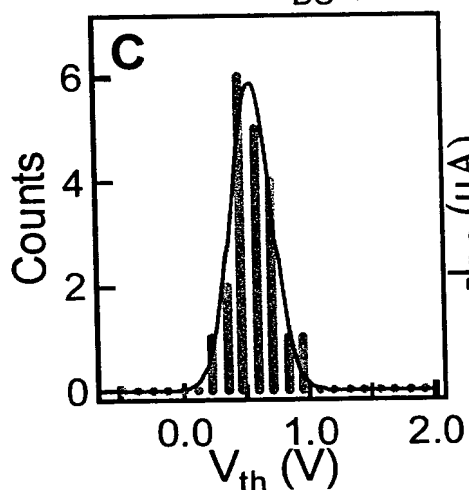
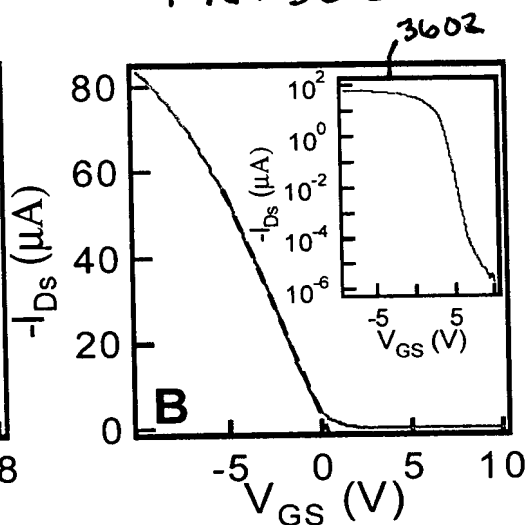


FIG. 36 C

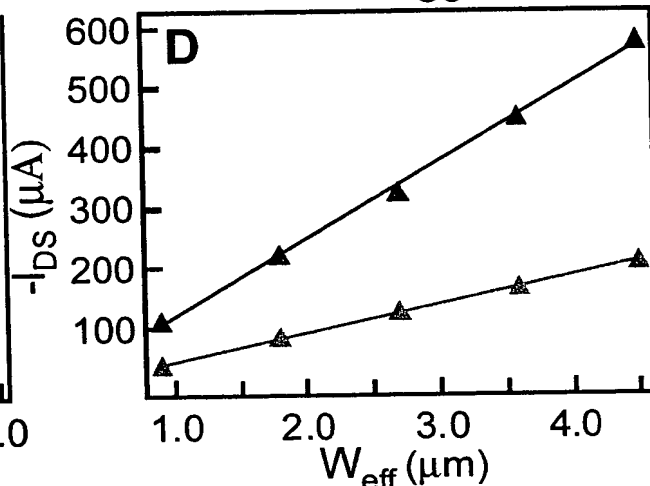


FIG. 36 D

FIG. 37A

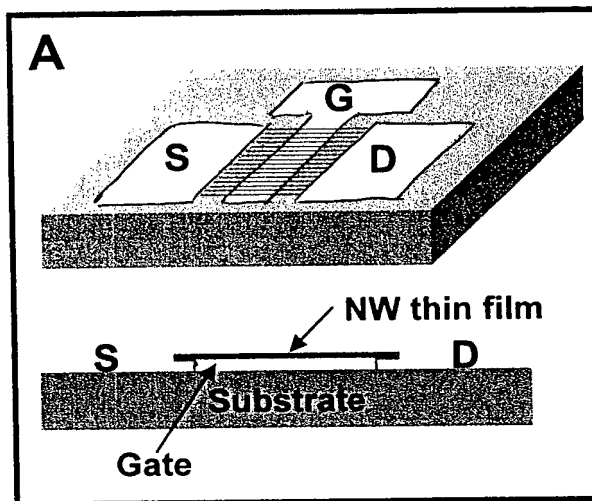


FIG. 37B

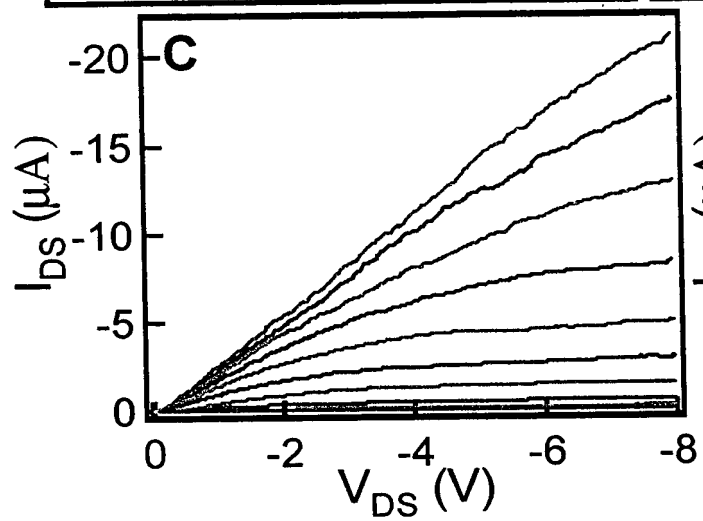
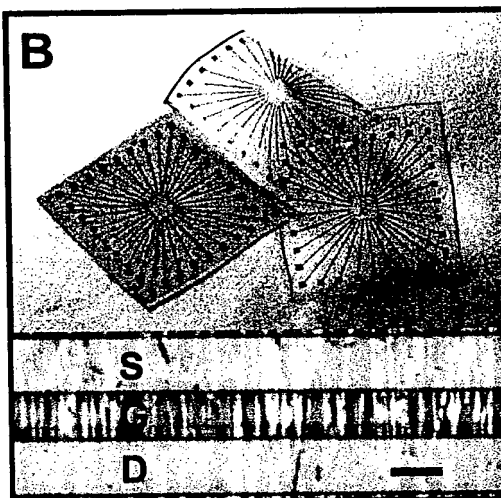


FIG. 37C

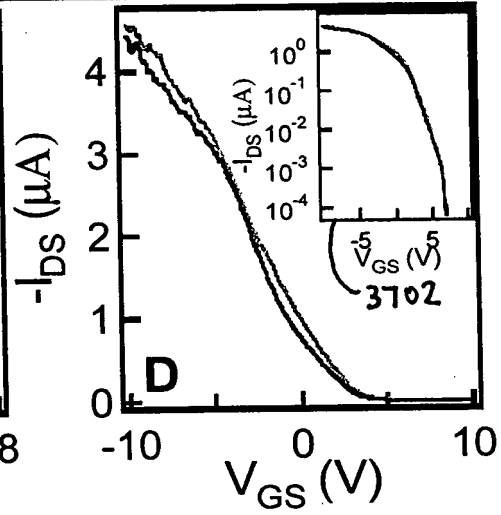


FIG. 37D

A

G (NaCl solution)

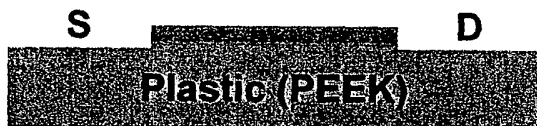


FIG. 38A

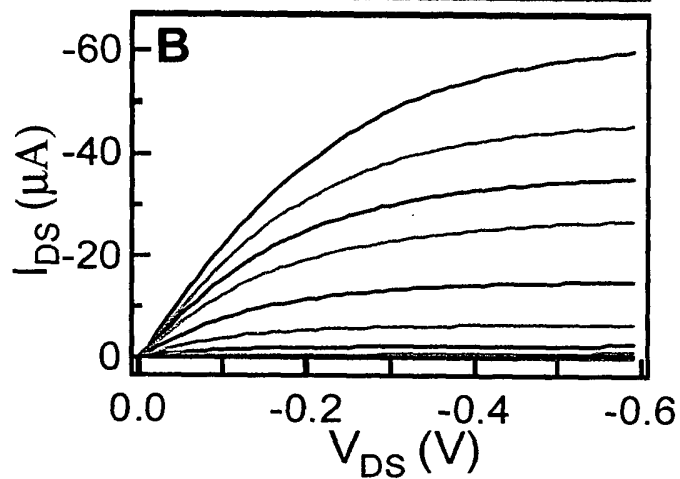


FIG. 38B

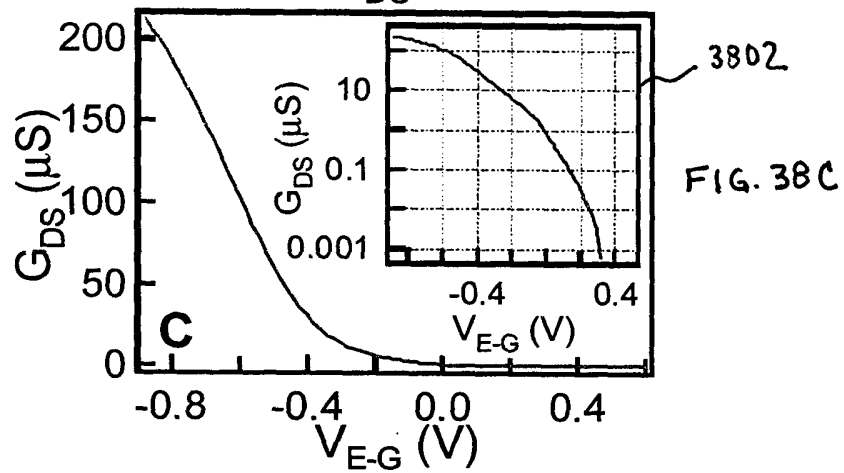


FIG. 38C

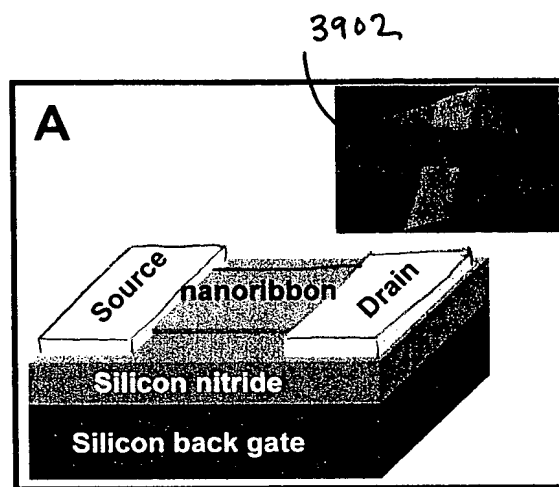


FIG. 39A

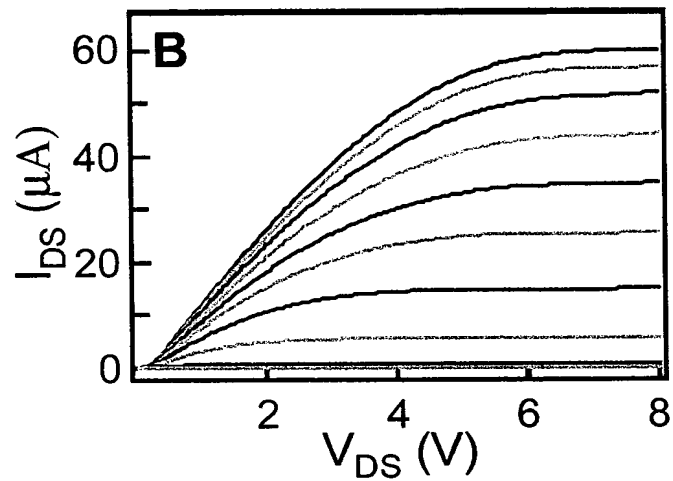


FIG. 39B

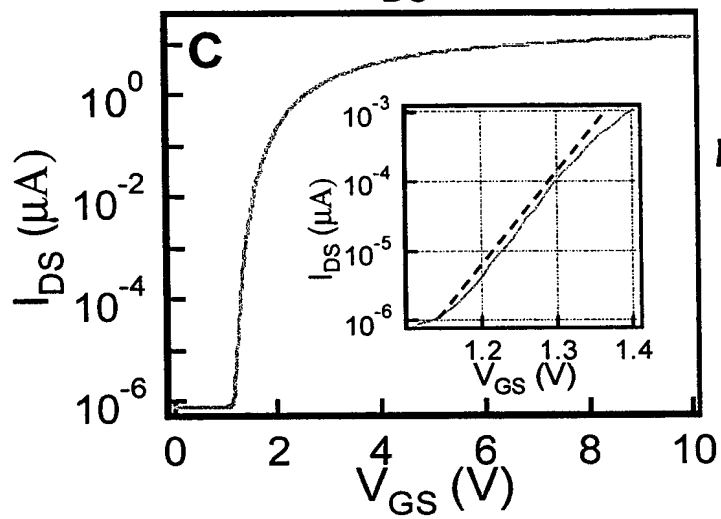


FIG. 39C

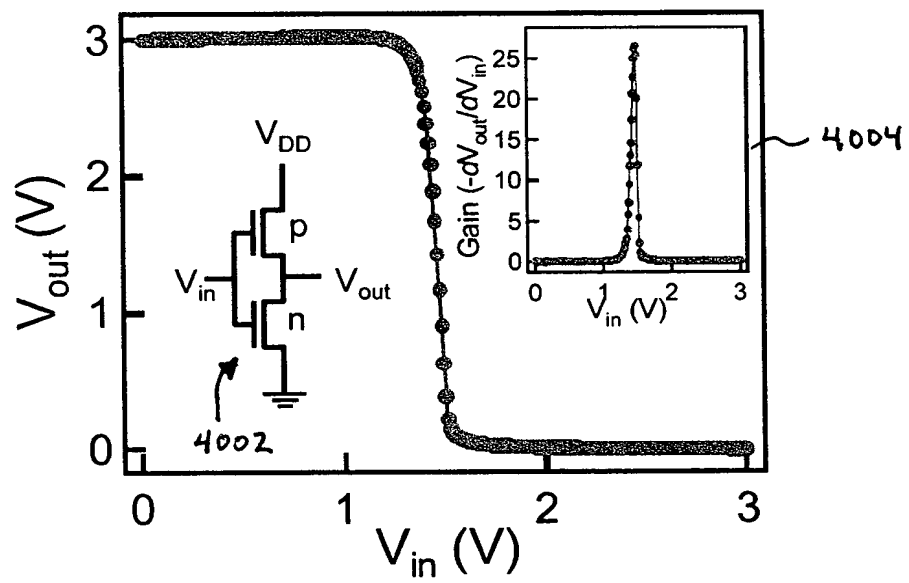


FIG. 40

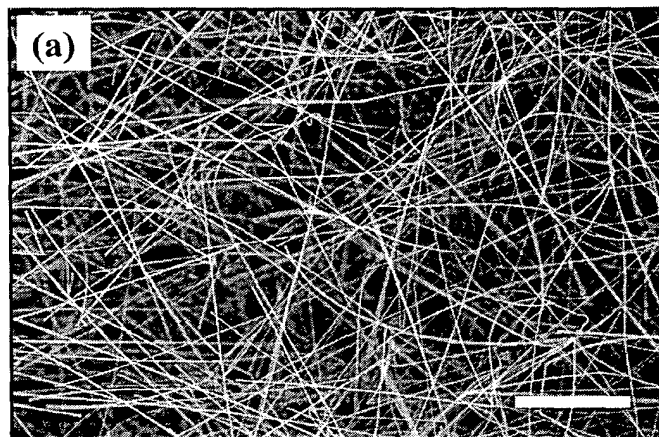


FIG. 41A

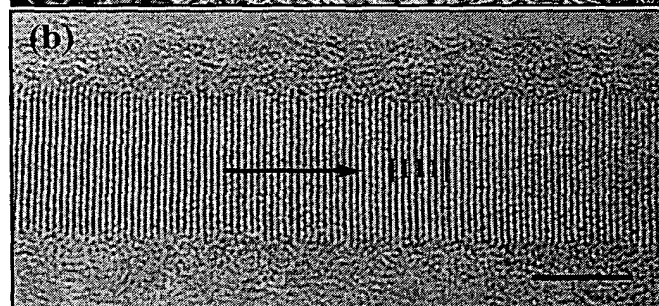


FIG. 41B

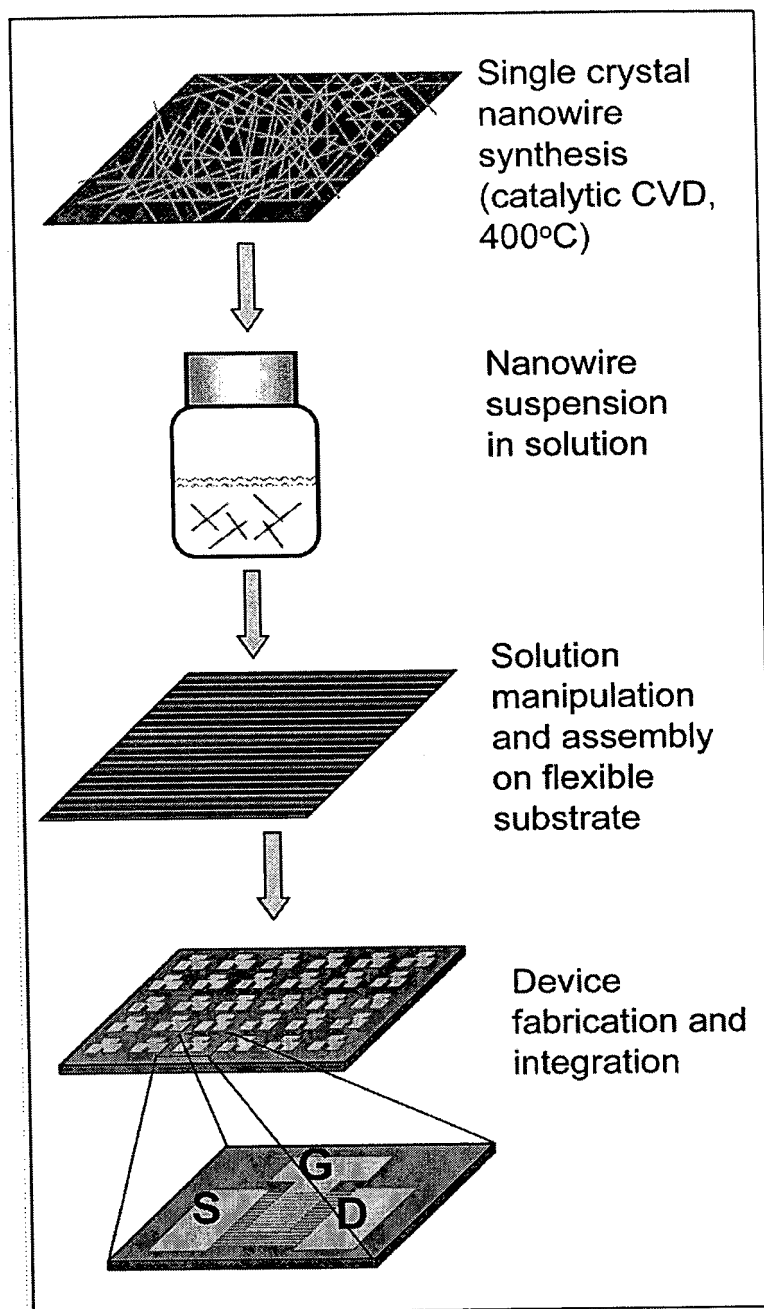


FIG. 42

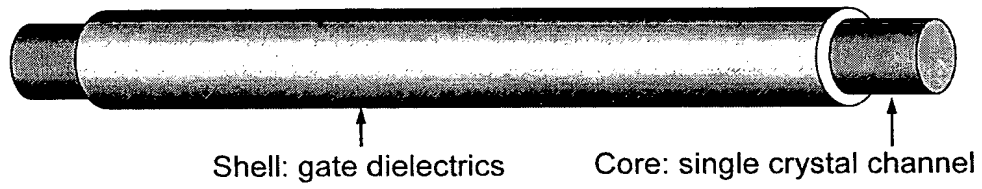


FIG. 43

A: a-Si Technology



FIG. 44A

B: poly-Si Technology

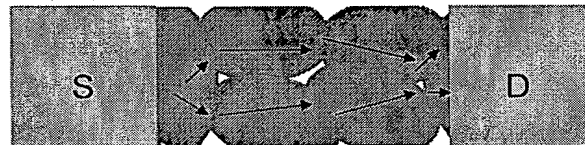


FIG. 44B

C: Si Nanowire Technology

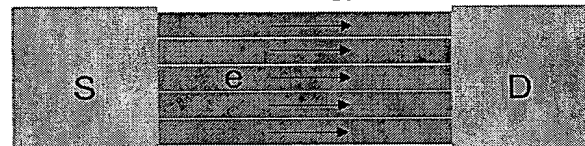


FIG. 44C

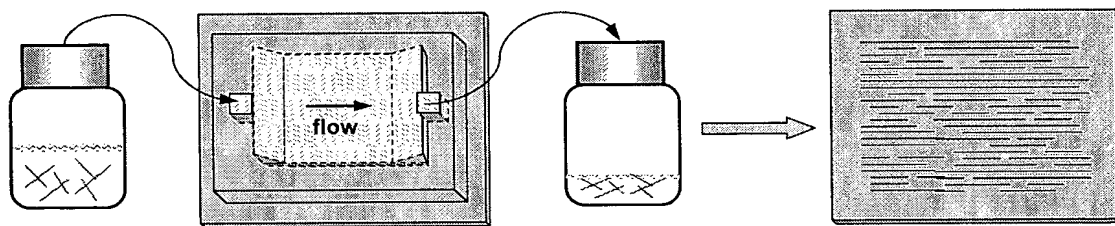


FIG. 45

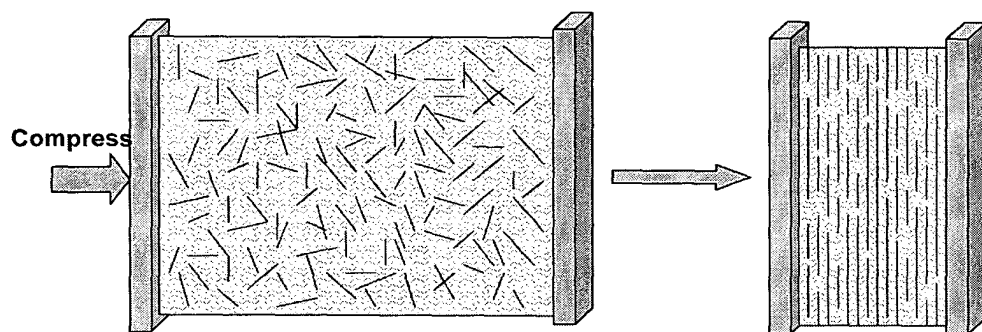


FIG. 46

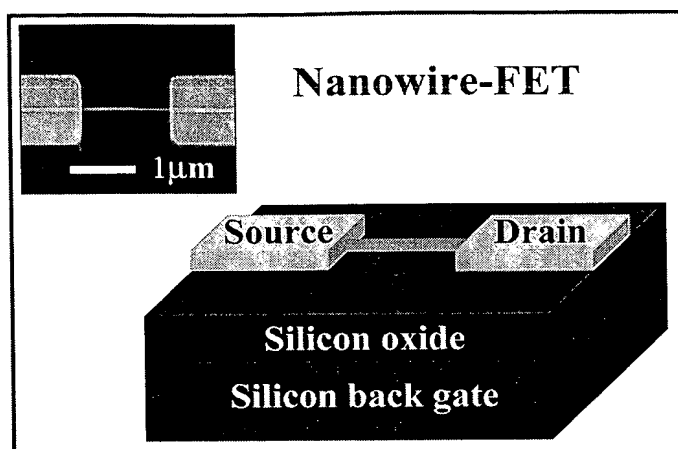


FIG 47

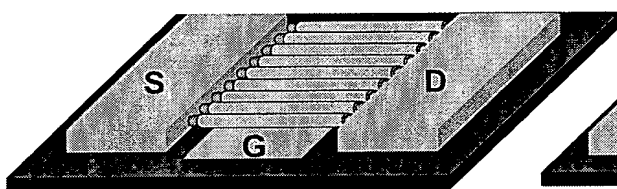


FIG. 48A

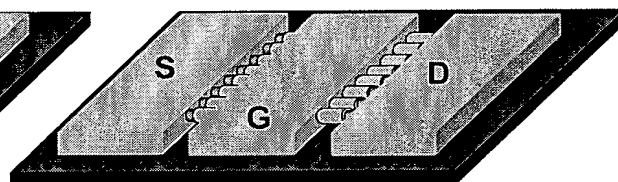


FIG. 48B